FAA OVERSIGHT OF THE COMMUTER AIRLINE INDUSTRY

[100-73]

HEARING

BEFORE THE

SUBCOMMITTEE ON INVESTIGATIONS & OVERSIGHT

OF THE

COMMITTEE ON
PUBLIC WORKS AND TRANSPORTATION
HOUSE OF REPRESENTATIVES

ONE HUNDREDTH CONGRESS

SECOND SESSION

SEPTEMBER 28, 1988

Printed for the use of the
Committee on Public Works and Transportation

U.S. GOVERNMENT PRINTING OFFICE

90-170 WASHINGTON : 1988

For sale by the Superintendent of Documents, Congressional Sales Office
U.S. Government Printing Office, Washington, DC 20402

t)641-19

COMMITTEE ON PUBLIC WORKS AND TRANSPORTATION

GLENN M. ANDERSON, California, *Chairman*

ROBERT A. ROE, New Jersey
JOHN B. BREAUX, Louisiana
NORMAN Y. MINETA, California
JAMES L. OBERSTAR, Minnesota
HENRY J. NOWAK, New York
NICK JOE RAHALL II, West Virginia
DOUGLAS APPLEGATE, Ohio
RON DE LUGO, Virgin Islands
GUS SAVAGE, Illinois
DOUGLAS H. BOSCO, California
ROBERT A. BORSKI, Pennsylvania
JOE KOLTER, Pennsylvania
TIM VALENTINE, North Carolina
EDOLPHUS TOWNS, New York
WILLIAM O. LIPINSKI, Illinois
J. ROY ROWLAND, Georgia
ROBERT E. WISE, JR., West Virginia
KENNETH J. GRAY, Illinois
PETER J. VISCLOSKY, Indiana
JAMES A. TRAFICANT, JR., Ohio
JIM CHAPMAN, Texas
LOUISE McINTOSH SLAUGHTER, New York
JOHN LEWIS, Georgia
PETER DEFAZIO, Oregon
BENJAMIN L. CARDIN, Maryland
BILL GRANT, Florida
DAVID E. SKAGGS, Colorado
JAMES A. HAYES, Louisiana
CARL C. PERKINS, Kentucky
BOB CLEMENT, Tennessee

JOHN PAUL HAMMERSCHMIDT, Arkansas
BUD SHUSTER, Pennsylvania
ARLAN STANGELAND, Minnesota
NEWT GINGRICH, Georgia
WILLIAM F. CLINGER, JR., Pennsylvania
GUY V. MOLINARI, New York
BOB McEWEN, Ohio
THOMAS E. PETRI, Wisconsin
DON SUNDQUIST, Tennessee
NANCY L. JOHNSON, Connecticut
RON PACKARD, California
SHERWOOD BOEHLERT, New York
DEAN A. GALLO, New Jersey
HELEN DELICH BENTLEY, Maryland
JIM LIGHTFOOT, Iowa
J. DENNIS HASTERT, Illinios
JAMES M. INHOFE, Oklahoma
CASS BALLENGER, North Carolina
FREDERICK S. UPTON, Michigan
BILL EMERSON, Missouri

SUBCOMMITTEE ON INVESTIGATIONS AND OVERSIGHT

JAMES L. OBERSTAR, Minnesota, *Chairman*

ROBERT A. ROE, New Jersey
NORMAN Y. MINETA, California
HENRY J. NOWAK, New York
ROBERT A. BORSKI, Pennsylvania
J. ROY ROWLAND, Georgia
KENNETH J. GRAY, Illinois
LOUISE M. SLAUGHTER, New York
EDOLPHUS TOWNS, New York
BOB CLEMENT, Tennessee
JOHN LEWIS, Georgia
GLENN M. ANDERSON, California
(Ex Officio)

WILLIAM F. CLINGER, JR., Pennsylvania
BUD SHUSTER, Pennsylvania
NEWT GINGRICH, Georgia
GUY V. MOLINARI, New York
BOB McEWEN, Ohio
NANCY L. JOHNSON, Connecticut
HELEN DELICH BENTLEY, Maryland
JOHN PAUL HAMMERSCHMIDT, Arkansas
(Ex Officio)

CONTENTS

TESTIMONY

	Page
Kern, John, Acting Deputy Associate Administrator for Regulations and Certification, Federal Aviation Administration, accompanied by Dan Beaudette, Deputy Director, Office of Flight Standards; Dan Underwood, Operations Inspection Supervisor; and Ray Morantes, Airworthiness Inspector	5

PREPARED STATEMENTS

Bentley, Hon. Helen Delich, a Representative in Congress from Maryland	77
Clinger, Hon. William F., Jr., a Representative in Congress from Pennsylvania	2
Kern, John	90

SUBMISSIONS FOR THE RECORD

Kern, John, Acting Deputy Associate Administrator for Regulations and Certification, Federal Aviation Administration:	
FAA response to Chairman Oberstar regarding carriers holding both Part 121 and Part 135 operating certificates	10
Task force recommendations from Air Transport Association to FAA Administrator McArtor concerning flight crew performance	14
FAA response to Chairman Oberstar relating to the development of air safety indicators	68
Compilation of colleges and universities offering a degree in aviation related disciplines	76
FAA response to Chairman Oberstar concerning requirements for commuter airlines reporting financial data	80
FAA response to Chairman Oberstar concerning publication of final rule on B–747 overwing exits	89

FEDERAL AVIATION ADMINISTRATION'S OVERSIGHT OF THE COMMUTER AIRLINE INDUSTRY

WEDNESDAY, SEPTEMBER 28, 1988

HOUSE OF REPRESENTATIVES,
COMMITTEE ON PUBLIC WORKS AND TRANSPORTATION,
SUBCOMMITTEE ON INVESTIGATIONS AND OVERSIGHT,
Washington, DC.

The subcommittee met, pursuant to notice, at 10:10 a.m., in room 2167, Rayburn House Office Building, Hon. James L. Oberstar (chairman of the subcommittee) presiding.

Mr. OBERSTAR. The Subcommittee on Investigations and Oversight will come to order.

We have been waiting for Mr. Clinger, but he has been necessarily and unavoidably detained at another committee activity this morning. He is delayed beyond the time he anticipated. He has given us his permission to proceed. By unanimous consent the gentleman's statement will be included in the record at this opening point.

[Mr. Clinger's prepared statement follows:]

OPENING STATEMENT OF
THE HONORABLE WILLIAM F. CLINGER, Jr.
BEFORE THE
SUBCOMMITTEE ON INVESTIGATIONS AND OVERSIGHT
SEPTEMBER 28, 1988

THANK YOU, MR. CHAIRMAN. I HAVE A FEW BRIEF REMARKS.

I APPRECIATE YOUR EFFORTS TO CALL THIS MORNING'S HEARING, AND LIKEWISE, I WANT TO THANK OUR WITNESSES FOR BEING WITH US THIS TODAY.

THE COMMUTER AIR CARRIER INDUSTRY HAS BEEN WITNESS TO TREMENDOUS CHANGE AND GROWTH IN THE LAST 10 YEARS, AND IN SPITE OF THESE PRESSURES, I BELIEVE IT HAS COME THROUGH THE DECADE IN VERY GOOD SHAPE.

THINK BACK TO THE YEARS IMMEDIATELY FOLLOWING DEREGULATION, AND RECALL THE SMALL AND COMPARATIVELY CRUDE EQUIPMENT THEN FAVORED BY COMMUTER CARRIERS. PISTON AIRCRAFT SUCH AS PIPER CHIEFTAINS, BEECH QUEEN-AIRS, AND CESSNA TWINS WERE THE FLEET MAINSTAYS. AND NOW LOOK TODAY, AT THE SOPHISTICATED GENERATION OF TURBINE POWERED EQUIPMENT CROWDING THE TARMACS, AND YOU GAIN A REAL APPRECIATION FOR THE EVOLUTIONARY CHANGES AND MATURITY OF THE INDUSTRY.

THE MANAGEMENT OF COMMUTER AIR CARRIERS HAS LIKEWISE UNDERGONE DRAMATIC CHANGE. MOM AND POP OPERATIONS HAVE GIVEN WAY TO RELATIVELY LARGE, SOPHISTICATED MANAGEMENTS THAT OFTEN ARE AFFILIATED WITH MAJOR AIR-CARRIERS, LENDING RESPECTABILITY AND STABILITY TO THE INDUSTRY.

BUT AS WAS RECOGNIZED BY THE FAA EARLIER THIS YEAR, THE QUESTION ARISES WHETHER FEDERAL REGULATIONS AND ENFORCEMENT HAVE KEPT PACE WITH THE INDUSTRY, AND WHETHER CURRENT PRACTICES AND PROCEDURES ADEQUATELY PROTECT THE FLYING PUBLIC. WE NEED TO ASK OURSELVES IF THE INTENSE COMPETITION OF TODAY'S MARKET GOES BEYOND THE BOUNDS OF HEALTHY RIVALRY, DRIVING MANAGEMENT TO EXCEED ITS CAPABILITIES TO OPERATE SAFELY. IS THE INDUSTRY ACCOMMODATING GROWTH WELL, OR ARE THE CARRIERS CUTTING CORNERS TO MAINTAIN MARKET SHARE?

THE FAA'S SPECIAL INVESTIGATION OF THE INDUSTRY SHOULD ANSWER THESE QUESTIONS, AND I'M LOOKING FORWARD TO REVIEWING THEIR FINAL REPORT LATER THIS YEAR.

THAT CONCLUDES MY STATEMENT, MR. CHAIRMAN, AND AGAIN, I WANT TO THANK OUR WITNESSES FOR TAKING TIME OUT OF THEIR BUSY SCHEDULES TO BE HERE THIS MORNING.

-- END --

Mr. OBERSTAR. One of the functions of Congressional oversight is to be preventive, to sniff out problem areas before they degenerate into actual crises.

Probably the most important function of oversight is preventing the loss of life, and that is an awesome responsibility shared by the Congress, the Federal Aviation Administration, the National Transportation Safety Board, the airline companies themselves, flight crews, and all of those dedicated people and professionals who make up the aviation community.

Practiced effectively, oversight is a responsibility that enables us to look to the future, to be anticipatory rather than reactive. Legislative oversight more than anything else is a continuing process. It is a partnership with the Executive Branch, with the private sector, as well as with State and local government.

The purpose of today's hearing is to be exactly that, to be anticipatory, to look to the future, to identify problems now, and to find ways to resolve those problems and prevent disaster in the future.

We are here to look at safety trends in the commuter airline industry and, hopefully, to tailor solutions that will improve safety and ultimately save lives.

Commuter airlines are hardly a new phenomenon. Many of today's major airlines—American, Northwest, others—are products of the 1920s and 1930s when they all operated essentially one standard type of aircraft, the trusty old 21-seat Douglas DC–3.

The problem of commuter service should not be new to the FAA or to its predecessor agency. What is new in the commuter sector is the proliferation of the number of carriers, now numbering some 170, and the rapid increase in boardings, passing 27 million in 1987, since deregulation revolutionized the airline industry in 1978. That, not coincidentally, was the last time that operating regulations for that sector were overhauled by the FAA in anticipation of deregulation.

FAA Administrator Allan McArtor, to his great credit, has responded to a doubling of the commuter accident rate in 1987 over the very good and exemplary year of 1986 by ordering a top-to-bottom special inspection program. Administrator McArtor wants to answer the not so simple question, "why?" Why that increase? This inspection program is an excellent first step.

This is the subcommittee's first foray as well into the problems of the commuter industry, and this will be the first in a series of continuing, intensive oversight hearings on commuter operations, including the various sectors of commuter operations such as pilot recruitment and training, maintenance, minimum equipment lists, inspections, financial condition, and other airworthiness and operations issues.

The FAA is just a few days away from completing Phase Two of its program, the on-site inspections of some 35 selected commuter airlines. Today we will hear what the FAA has learned so far. We will hear from those management officials responsible for planning the program, as well as those who are actually carrying out the inspections. I look forward to a very informative, educational, and productive session for ourselves, for our witnesses, for the traveling public, and for the commuter industry.

Our first and only panel of witnesses today is Mr. John Kern, the Acting Deputy Associate Administrator for Regulations and Certification—I must say, your title is getting longer every year, Mr. Kern—accompanied by Mr. Dan Beaudette, Deputy Director, Office of Flight Standards; Mr. Dan Underwood, Operations Inspection Supervisor; and Mr. Ray Morantes, Airworthiness Inspector.

Gentlemen, would you please come forward?

[Witnesses sworn.]

Mr. OBERSTAR. The Chair would like to acknowledge for the record the arrival at this time of our colleague from Pennsylvania, Mr. Clinger.

Mr. CLINGER. Thank you, Mr. Chairman. Again I was detained, necessarily, by another committee responsibility.

Mr. OBERSTAR. A fate that we all share and understand too well in this Congress.

Again, Mr. Kern and associates, welcome. We are glad to have you here. I am very pleased to be able to engage in a hearing in which we are looking ahead rather than looking back with alarm and deep concern. This is one of those special occasions when we can march forward together, anticipating and preventing rather than trying to find out how things went wrong.

Please proceed.

TESTIMONY OF JOHN KERN, ACTING DEPUTY ASSOCIATE ADMINISTRATOR FOR REGULATIONS AND CERTIFICATION, FEDERAL AVIATION ADMINISTRATION, ACCOMPANIED BY DAN BEAUDETTE, DEPUTY DIRECTOR, OFFICE OF FLIGHT STANDARDS; DAN UNDERWOOD, OPERATIONS INSPECTION SUPERVISOR; AND RAY MORANTES, AIRWORTHINESS INSPECTOR

Mr. KERN. Thank you, Mr. Chairman.

Mr. Chairman and members of the subcommittee, on behalf of Administrator McArtor I welcome this opportunity to appear before you today to discuss our ongoing special emphasis commuter inspection program. With me today are Dan Beaudette, Deputy Director, Flight Standards Service, and two of our aviation safety inspectors, Dan Underwood and Raymond Morantes. Mr. Underwood is an operations inspector from our Lincoln, Nebraska Flight Standards District Office. Mr. Morantes is an airworthiness inspector from our Dallas-Fort Worth Flight Standards District Office. Each has participated recently as a member of a commuter inspection team during our special emphasis program.

Last year we witnessed an accident record in the commuter segment of our industry which Administrator McArtor described earlier this year as "unacceptable." Commuter airlines experienced 33 accidents and 58 fatalities in 1987, the highest totals since 1980. The accident rate per 100,000 hours more than doubled from what we saw in 1986, when the industry experienced a record low number of accidents.

The 1987 safety record for commuter air carriers was a significant departure from the positive trend since 1980 which has occurred despite the record growth in the commuter airline industry. Passenger traffic on commuter carriers had increased 11.2 percent annually from 1980 to 1987, from 12.9 million enplanements to 27.2

million enplanements. Revenue passenger miles more than doubled.

Ten years ago the FAA totally revised and upgraded our Part 135 operating regulations for commuter airlines as a result of deregulation. Every existing commuter carrier was recertified to meet higher regulatory standards and every new commuter entrant had to meet those same standards. Those regulatory changes and improvements within the industry and FAA brought about substantial change in the level of safety by commuter operators.

The events of 1987 and the first three months of this year, however, prompted Administrator McArtor on March 8 to announce a special one-year, three-phase inspection of commuter operators to determine their compliance with FAA's rules and regulations. I would now like to provide an update on our inspection efforts and other initiatives we have taken to improve commuter safety.

Phase One of our special commuter inspection program, which was completed on April 22, involved an analysis of all available data related to commuter airline safety to identify potential inspection candidates and focus areas for our effort. A 36-member analysis team composed of DOT, FAA, DOD and contract personnel was assembled and divided into five panels. The panels were tasked with the responsibility for evaluating specific data on individual commuter operators and identifying candidates to be inspected.

The analysis team identified several focus areas for the inspections. Airworthiness focus areas identified were management, training, airworthiness directives, inspection programs, minimum equipment lists, service difficulty reports, and weight and balance. Operations focus areas identified were management, training, check airmen, crew coordination, flight and rest time, and weight and balance.

Our analysis found management practices to be a problem area. Many commuters have experienced rapid growth from a two- or three-aircraft fleet to large numbers of aircraft without concurrently acquiring managers experienced in large, complex operations. This problem came to light from the large number of findings in major program areas which were a direct result of inadequate, poor, or nonexistent management procedures.

Two critical areas where management deficiencies were readily identified were inspection and maintenance programs. Many commuter operators experiencing rapid growth as a result of deregulation added new or different make and model aircraft. The addition of these aircraft required more complex inspection and maintenance programs. These programs were unfamiliar to existing management personnel. Specific problem areas involved inspection programs which did not meet the manufacturer's recommended inspection intervals and failed to cover all the equipment installed on the aircraft. We also found maintenance programs which lacked adequate procedures or adequate recordkeeping. We believe these are key to a sound maintenance program.

Training programs, including management, flight crew and maintenance personnel training, have also not kept pace with the rapid changes in the commuter industry. Because they are integral parts of training, check airmen programs and crew coordination were deemed necessary focus areas. As you know, check airmen ad-

minister flight and knowledge tests, thereby controlling the operational standards of the industry and providing feedback to instructors in training programs. Lack of crew coordination has been determined to be directly involved in numerous accidents and continues to surface as a problem area as the result of FAA enroute inspections.

After completion of the Phase One analysis we identified inspection candidates, approximately 20 percent of the commuter industry. Phase Two, consisting of on-site inspections of designated commuter operators, began on May 23 and will be completed by the end of this month. To date we have completed inspections on 26 carriers and another 5 are in progress. Inspections for 7 operators were cancelled as a result of the carriers voluntarily surrendering their operating certificates or operations specifications.

The on-site inspections were conducted by inspection teams, usually consisting of a team leader and seven inspectors, who were assembled from outside the certificate-holding office. This was done to avoid any inference of partiality by the inspection team.

As we complete Phase Two it should be noted that these are special emphasis inspections, not to be compared to our regular NASIP inspections which are complete top-to-bottom safety audits. These special emphasis inspections are limited to the focus areas and are designed to uncover any deficiency trends at the inspected air carrier and the industry in general. Of course, any safety problems found during Phase Two were immediately corrected and, in some instances, enforcement actions have been initiated. To date approximately 200 Enforcement Investigation Reports have been opened. At the conclusion of each inspection, the inspection team provides the inspected carrier with an exit briefing. A briefing and a written report are also provided to the certificate-holding Flight Standards District Office manager and the carrier's principal inspector who in turn will brief the commuter operator and begin to work with the operator to correct deficiencies.

Phase Three, which is the report compilation stage, will be completed in December, when we plan to issue a final report. Shortly thereafter we also plan to assemble all of our principal inspectors with certificate management responsibilities for commuter air carriers to discuss the inspection results and the requirements of structured visits which they will be tasked to carry out with each of their commuter operators.

Our special emphasis inspection should tell us a lot about current compliance with our safety regulations by commuter operators and will assist in identifying areas where we may need to stress additional surveillance or follow-up activity. Our review of commuter operators, however, has not been limited to the special emphasis inspection. As part of the Administrator's Impact 88 initiatives, we have examined the issue of aircrew performance, particularly the need to improve professionalism on the part of both Part 121 and commuter pilots.

In conjunction with NASA, APA, ALPA, RAA and ATA we participated in a joint Government/industry task force on flight crew performance which made a number of recommendations. Some of the more significant ones would: require Part 135 operators, who operate aircraft requiring two pilots, to comply with Part 121 train-

ing, checking, qualifications, and recordkeeping requirements; call for the issuance of an SFAR and Advisory Circular to permit development of innovative training programs; establish a requirement that all training be accomplished through a certificate holder's training program; make the approval of training programs based on course content and training aids rather than using specific programmed hours; and require Cockpit Resource Management Training along with the encouragement of greater use of Line Oriented Flight Training. Another recommendation called for the creation of an FAA office with responsibility for air carrier flight crewmember training.

We have developed an ambitious action plan to implement the task force recommendations. We have already started working on the regulatory projects outlined in our action plan to implement the recommendations of the task force. We have in final coordination a draft Advisory Circular which will provide guidelines to all air carriers for establishing and monitoring Cockpit Resource Management Training. This training is designed to be a regular part of recurrent training for all flight crewmembers. Under review is a proposed rule which would establish a voluntary alternative method for meeting the training, checking, certification, and qualification requirements for flight crewmembers, flight attendants, aircraft dispatchers, instructors, evaluators and other operational personnel subject to Parts 121 and 135 of our regulations.

We also have under review a proposed rule to upgrade Part 135 commuter training requirements. We also plan to update our Advisory Circular 120-35A on LOFT. We are continuing to review our regulations which govern commuter operations to determine whether additional changes should be made.

Next month we will be implementing another task force recommendation by establishing an organizational unit responsible for air carrier flight crewmember training. This organization will be located in our Flight Standards Service. We are also seeking to increase use of simulation to increase pilot skills and have issued an exemption from inflight training requirements to commuter operators to permit them to make greater use of advanced training devices, a basic form of simulator, in recurrent pilot competency/instrument proficiency check requirements.

In closing, I want to stress that we are taking action on a variety of fronts to achieve improvements in commuter safety. We think our inspection efforts, along with regulatory and other changes, will go a long way toward identifying and remedying safety deficiencies in the commuter industry.

That completes my prepared statement, Mr. Chairman. My colleagues and I would be pleased to answer any questions you or other Members may have at this time. Thank you.

Mr. OBERSTAR. Thank you very much, Mr. Kern. That is a very commendable statement, a very encouraging initiative on the part of FAA. You are assessing this issue of commuter airline service on a broad front. You are doing what the FAA should be doing in its responsibility of oversight, and after we return from this vote, which is now in progress with five minutes remaining, we will have some questions about further details of Phases One, Two, and Three.

[Recess.]

Mr. OBERSTAR. The subcommittee will resume its sitting.

Just for the record I would like to establish the credentials of our witnesses. We know Mr. Kern's background experience and have that on record.

Mr. Morantes, could you tell us a little bit about your professional background and experience, your years of service with the FAA, your years in Flight Standards, and so forth?

Mr. MORANTES. Good morning, sir. I've been with the FAA 10 years. My present position is Principal Aviation Safety Inspector. I have responsibility for approximately 15 repair stations and 7 air taxi operators, some of which are supplemental cargo and others are passenger-carrying air taxi operations of nine or less. Before that I worked for the Air Force and General Dynamics with a total experience of about 27 years, sir.

Mr. OBERSTAR. A very broad experience. I understand you also worked with the Government of Argentina?

Mr. MORANTES. Yes, sir. I had the opportunity to go down there and work with their aviation safety inspectors. They were trying to get a bilateral agreement to establish the same regulations that we're working with here. Specifically I worked with them on repair stations.

Mr. OBERSTAR. Very good. Thank you, Mr. Morantes.

Mr. Underwood?

Mr. UNDERWOOD. Yes, Mr. Chairman. I have nine years with the Federal Aviation Administration, all of which has been in Flight Standards, the first five in Minneapolis and since then in Lincoln, Nebraska.

I have been the Operations Unit Supervisor for the last two years in Lincoln. I supervise five inspectors and two clerical people. I have participated as an Operations Group Coordinator in a national inspection.

My background prior to the FAA was working for a fairly large fixed-base operator in Lincoln, Nebraska. I was Director of Operations and Chief Pilot for about 10 years. I was the Chief Flight Instructor for the flight school in both airplanes and helicopters. I was a pilot examiner for 10 years. In 1975 I was awarded the Flight Instructor of the Year award. That's basically what my background has been.

Mr. OBERSTAR. You also were involved in the comprehensive "white gloves" inspection program, the NASIP, with special emphasis on Part 135 carriers, as I understand it?

Mr. UNDERWOOD. That is correct.

Mr. OBERSTAR. Thank you.

Mr. Beaudette, would you give us your background please?

Mr. BEAUDETTE. Mr. Chairman, I've been with the FAA for nearly 13 years, starting as a field inspector doing international work. I've worked as a field supervisor, regional inspector, regional supervisor, and have been at headquarters now for six or seven years, working in a myriad of jobs there, leading up to Deputy Director of Flight Standards. All of my positions were with Flight Standards.

My flying background started with the Air Force and I am still an active U.S. Air Force Reserve pilot.

Mr. OBERSTAR. Thank you very much.

The first area of inquiry is just the raw numbers. There are 170 commuters operating, more or less, depending on who is in and who is out. You selected 35 for inspection with a mix of good operators and those with questionable operating practices.

How many commuter airlines in all have you inspected since the beginning of this surveillance program in varying degrees of inspection?

Mr. KERN. Let me make sure I get my numbers correct. Out of the original 35 I believe we've completed all but 6. I believe we're through with 29 right now and the last 6 are in progress. We intend to have those completed by the end of this month.

Mr. OBERSTAR. And upon completion of Phase Three, I understand the team will decide whether to recommend a more extensive inspection of the other 135 or so carriers. Is that correct?

Mr. KERN. Yes, sir. That could be one of the outcomes.

Mr. OBERSTAR. But no decision has yet been made?

Mr. KERN. No, sir.

Mr. OBERSTAR. That will await further review of findings and recommendations?

Mr. KERN. Yes, sir.

Mr. OBERSTAR. How many operators hold both 121 and 135 certificates?

Mr. KERN. I don't know at this time, Mr. Chairman. Let me ask if Mr. Beaudette might know.

I can supply that number for the record, but it's safe to say that a significant number of the larger commuters as we've historically known them, since they have upgraded their aircraft to larger aircraft, have been certified as Part 121 operators in the past four to five years. I will supply that number for the record.

[The following was received from Mr. Kern:]

Currently there are 41 operators holding both Part 121 and Part 135 Operating Certificates.

Mr. OBERSTAR. I understand it's in the neighborhood of 30 or 33, thereabouts. And how many of those that were included in this Phase One inspection have dual certificates? I think that would be interesting to know.

How would you characterize the findings so far? Serious problems? Problems in the early stage? Problems that are correctable? Just a very general question before I go into specifics.

Mr. KERN. Mr. Chairman, I would characterize— and these are my own words—the findings so far to be very similar to the findings we found early on in our national inspection program or "white gloves" inspection program for the large 121 air carriers, the program that we started back in mid-1984 and through 1985 and now have continued as our National Safety Inspection Program. As an example, I mentioned in my statement that many of the commuter air carriers that we've looked seem to have the same kind of management and maintenance and operational problems that many of the larger carriers had during their expansion after deregulation. It was stated in our National Inspection Program report or our "white gloves" inspection report that we issued in late 1985 or 1986 that many of the large air carriers that we knew

then had grown rapidly and had in effect outgrown the management capability, the computer capability, and the maintenance capability of the company.

So as a general characterization I would say that the findings so far seem to indicate that the commuter industry, because of its new equipment, rapid growth, and other substantial changes into more complex equipment, are basically facing those same kinds of problems.

Mr. OBERSTAR. Mr. Beaudette, how would you characterize the overall findings? What area or areas would you underscore as of greatest significance, or some things that jumped out and surprised you when you went through this process?

Mr. BEAUDETTE. I think I would basically concur with Mr. Kern. We've now had a chance to look preliminarily at 20 to 25 of these. We're seeing the same kinds of things that we've seen in varying degrees with the larger carriers. The focus on management, the focus on recordkeeping, the focus on understanding and applying the rules in a changing environment—these are the same challenges facing the carriers that face our inspectors. But I think I would agree with the summation that Mr. Kern gave.

Mr. OBERSTAR. One of the findings that jumped out for me was that with respect to aircrew performance, the need to improve professionalism as cited in your statement, Mr. Kern, on the part of both Part 121 and commuter pilots. Further comments in your statement and other information that staff developed in the course of this inquiry call to mind that incident nearly three years ago, or a little over three years ago, actually, involving Galaxy Airlines. We had a crew, pilot and copilot and navigator, with a wide variance of experience; a very experienced pilot and a very junior, green copilot. The crew simply did not have a game plan when they entered that cockpit. When something went wrong, all three were troubleshooting. All three were trying to find out what the problem was and nobody was flying the aircraft until, suddenly, it was too late. This is the kind of thing that just whacked me as we went through that very agonizing process of inquiring into the matter of Galaxy Airlines.

Now I see findings that indicate that there are these kinds of problems throughout other segments of the commuter airline industry. Mr. Underwood, Mr. Morantes, would you comment on your reaction to aircrew performance? What are the principal problem areas and what do you recommend in the way of corrections?

Mr. UNDERWOOD. Mr. Chairman, through the growth of the aviation industry and particularly the commuter segment, a lot of the crews that are being used in the commuters have grown up from what we refer to as "on demand" or the smaller air taxi operators. In a lot of cases, probably most cases, these people are simply not used to working in a two-man crew environment.

The commuters have grown quite rapidly. I believe it's very important that we stress cockpit management in the training and in the enroute inspections that we conduct. We have to continue to pursue this cockpit resource management philosophy in these smaller carriers since they grew from a situation that simply didn't require that.

Mr. OBERSTAR. Mr. Morantes, do you have anything to add to that?

Mr. MORANTES. No, sir.

Mr. OBERSTAR. What recommendation do you have at this point for correction, apart from more training? What kind of training? What quality of training? Will you need to toughen the regulations?

Mr. UNDERWOOD. I'm not sure that we need to toughen the regulations. I think we need to take advantage of the regulations that we have. We need——

Mr. OBERSTAR. To make sure that the existing regulations are complied with?

Mr. UNDERWOOD. That's correct.

Mr. OBERSTAR. You feel that the existing FARs, with respect to pilot training and certification and crew performance in the cockpit, are sufficient; it's just that we need the airlines to do a better job of training their people?

Mr. UNDERWOOD. I believe that we need to continually review the existing regulations for the necessity of change. I believe that there probably are some areas that could be expanded and changed, but the situation we're faced with right now is to have the oversight to conduct enroute inspections, to observe training, to make sure—in using your own words—that it's "quality" instruction that they're getting. That's what we need to do right now.

Mr. KERN. Mr. Chairman, could I continue and add to that?

Mr. OBERSTAR. Please.

Mr. KERN. Thank you, Mr. Chairman.

I couldn't agree with Mr. Underwood more, that our inspector work force needs to continue not only the observation of the training on the ground and approval of the curriculum, but continue the enroute inspection activity that we have intensified in the commuter area. Mr. Underwood was highlighting some of the reasons for that need to me yesterday and he might want to say something later.

But in addition to that, let me say that we recognize in the FAA that the human in the system—not just the pilot, but the controller and the others—is, really the important link. There is no doubt in the Administrator's mind, or Tony Broderick's, or Dan Beaudette's, or mine that the training and cockpit resource management activities, the human resource management activities in the aviation system have been neglected for a number of years.

We have started a few initiatives. One of the initiatives that I talked about briefly in my statement had to do with the joint task force that was established after the Administrator's meeting in Kansas City with the so-called "300 chief pilots of the industry." Those recommendations have been received by the Administrator and, I should add, received enthusiastically. Those recommendations do call for upgraded training in both Part 135 for the commuter pilots and in Part 121. They call for things like mandatory cockpit resource management training. They expressed a concern for the people who are now coming up through the commuter industry, and everybody knows that that is a big problem. The turnover rate in the commuter industry, while I don't have the exact figures, is significant every year. I believe that as long as the major

air carriers continue to hire and to need pilots it will remain a problem that we need to focus on, because the people who come into the right seat of the commuter airlines end up being the captains of the large air carriers of the future.

We have taken action on a number of recommendations from that task force. I would be happy to supply for the record an update of not only the recommendations but where we are in that activity, if you so choose.

Mr. OBERSTAR. I was going to ask you to do that. I'm glad you volunteered, because I think it's important to have that on the record. I understand from your delivered testimony that the task force has made recommendations for 135 operators on training, checking, qualifications, recordkeeping and all of those. I think it would be very important to have all of those as part of this record as a benchmark to measure future progress.

[The following was received from Mr. Kern:]

Air Transport Association aia OF AMERICA

1709 New York Avenue, NW
Washington, DC 20006-5206
Phone (202) 626-4000

June 29, 1988

MEMORANDUM

TO: Joint Government/Industry Task Force on Flight Crew Performance Mailing List

SUBJECT: Transmittal of Task Force Recommendations to Administrator McArtor

The Task Force recommendations of the Training, Man-Machine Interface, and Operating Environment Working Groups were delivered to Administrator McArtor on June 8. All of the recommendations and the cover letter are attached. Also attached is the list of the May 2 Steering Committee meeting attendees who reviewed the recommendations.

Representatives of APA, ALPA, EAA, ATA, and NASA were present on June 8 when the recommendations were delivered to the Administrator. The organizations represented stated their desire to participate in future activities associated with the recommendations.

FAA is to prepare an "Action Plan" to manage the recommendations and establish a timetable. When available it will be forwarded to the Task Force Mailing List.

A chronological listing of the Task Force events is also provided.

Please contact me at (202) 626-4015 or WASXYXD if you have questions or comments

Walter S. Coleman
Assistant Vice President
Operations

Attachments

Attachment A

Air Transport Association ata OF AMERICA

1709 New York Avenue, NW
Washington, DC 20006-5206
Phone (202) 626-4000

June 8, 1988

The Honorable T. Allan McArtor
Administrator
Federal Aviation Administration
800 Independence Avenue, SW
Washington, DC 20591-0001

Dear Mr. McArtor:

Enclosed with this letter are the recommendations of the Joint Government/Industry Task Force on Flight Crew Performance.

Three working groups were formed following the establishment of the Joint Task Force in August, 1987. They were the Training, Man-Machine Interface, and Operating Environment Working Groups. Due to the interrelationship of many issues some of the recommendations of one working group refer to recommendations of another working group and also to recommendations on Cockpit Resource Management provided to you on March 9.

The Steering Committee, representing appropriate government and industry organizations, reviewed the enclosed material on May 2 and is forwarding it to you with its unanimous approval.

The Joint Task Force benefited from the dedication of the individuals involved and the support they received from each of their organizations. The contribution provided by FAA Flight Standards personnel was particularly helpful.

The members of the Task Force do not consider their work completed with the delivery of these recommendations. The individuals and organizations which provided the recommendations are prepared to work with FAA, with NASA, or any designated organization to achieve the objectives in crew performance issues that you, as Administrator, identified and which the Task Force addressed.

On behalf of all the individuals and organizations involved with the Joint Task Force on Flight Crew Performance, we thank you for permitting us to be a part of this process

Sincerely,

Walter S. Coleman
Assistant Vice President
Operations/Secretary to the
Joint Government/Industry
Task Force on Flight Crew
Performance

Enclosure

Attachment A

Joint Government/Industry Task Force
on Flight Crew Performance

Contents	Attachment
Training Working Group Recommendations	B
Man-Machine Interface Recommendations	C
Operating Environment Recommendations	D
Training Working Group Membership	E
Man-Machine Interface Working Group Membership	F
Operating Environment Working Group Membership	G
Steering Committee Organization and Meeting Record	H

Attachment B

Joint Government/Industry Task Force on
Flight Crew Performance - Training Working Group

EXECUTIVE SUMMARY

The Joint Task Force Training Working Group, consisting of members representing major air carriers, commuter air carriers, pilot associations, and government organizations have been meeting since November 1987 to develop definitive concepts that will enhance and overhaul air carrier flight crew training. The concepts have the consensus of the entire task force, and recognize:

- Training experience gained through simulation
- A need for flexibility in developing innovative training
- A need to require the highest level of training for Part 135 commuter air carriers.

The recommendations provide for many changes to airline flight crew training, checking, and qualification rules, the more significant of which:

- Require Part 135 commuters whose airplane operations require two pilots to comply with Part 121 training, checking, qualification and record keeping requirements.
- Provides for a Special Federal Aviation Regulation (SFAR) and Advisory Circular to permit development of innovative training programs.
- Recommends establishment of a National Air Carrier Training Program Office which provides training program oversight at the national level.
- Recommends the use of contractual assistance to draft implementing regulatory language.
- Require seconds-in-command (SICs) to satisfactorily perform their duties under the supervision of check airmen during operating experience.
- Requires all training be accomplished through a certificate holder's training program.
- Provides for approval of training programs based on course content and training aids rather than using specific programmed hours.
- Requires Cockpit Resource Management Training and encourages greater use of Line Oriented Flight Training (LOFT).

These concepts, <u>taken together as a whole,</u> apply the combined wisdom, judgement, and experience of training experts from across the entire spectrum of air transportation interests.

6/8/88

RECOMMENDATIONS

Note: Some of the following recommendations are self-explanatory. Others are quite complex; the decision was made that some accompanying preamble language is necessary in these cases to clearly establish the intention and rationale.

ITEM #1 Upgrade Part 135 Commuter Training Requirements

Recommendation

Amend FAR Part 135 as necessary to require commuter air carriers conducting operations with airplanes that require two pilot crewmembers to comply with the training, checking, and qualifications requirements of FAR Part 121 Subparts N and O, Appendices E, F, and H, and the record keeping requirements of FAR 121.683.

ITEM #2 Special Federal Aviation Regulation (SFAR)

Preamble

A "Special Federal Aviation Regulation" should be developed to offer an "alternative method" of accomplishing training and checking by Part 121 and 135 operators. The creation of a SFAR to offer an "Advanced Flight Crew Training Program" should in no way be considered mandatory for any carrier. The current FARs, along with the recommended changes to them, must continue to be available for those carriers not desiring a new option of training.

New technologies and methodologies in training and checking, along with new emphasis on training that has been recognized throughout the industry, is the main thrust for offering an "alternative method" of training.

Recommendation #2

Publish a SFAR authorizing advanced flight crew training program concepts using approved alternative methods. A suggested outline is provided as Attachment A.

ITEM #4 Establishment of FAA National Air Carrier Training Evaluation Program Office

Recommendation

On a priority basis, FAA should establish in Washington Headquarters a National Air Carrier Training Evaluation Program Office, accessible to the carriers and similar in concept to the National Simulator Program. This office should have primary responsibility for air carrier training programs established under the proposed SFAR, and should also provide the technical assistance and oversight as needed to Principal Operations Inspectors (POIs) for approval or modification of air carrier training programs.

ITEM #5 Use of Consultants and Continuing Assistance

Recommendation

In recognition of the workload being placed on FAA/Flight Standards and other divisions in expeditiously acting on recommendations from the Joint Task Force, FAA should fund the use of established, experienced consulting firms to draft regulatory language. Members of the Joint Task Force will be available to assist the FAA and consultants in this drafting process to ensure fidelity to the intent of these recommendations.

ITEM #6 Operating Experience (FAR 121.434)

Preamble

With the widespread acceptance of simulators, the additional operating experience that is mandated only if a simulator is used in the training program is no longer necessary. These rules were promulgated in 1970 with the intention of ensuring that the training acquired in the simulator was fully transferred to the aircraft. That transfer has been fully validated years ago. Second-in-command operating experience, which may currently be accomplished entirely from an observer's seat, should be strengthened.

Recommendation #7A

Amend the FAR 121.400 definitions of initial, transition, and upgrade training to indicate that previous qualifications must have been obtained with that certificate holder.

Recommendation #7B

Amend FAR 121.400 to vest with the crewmember the qualifications and training accomplished with a previous carrier in the event of a merger or divestiture.

Recommendation #7C

Provide regulatory authority to approve special one-time training programs for crewmembers cited above which avoid unnecessary duplication of subject material that is unchanged.

ITEM #8 Requalification Training

Recommendation

FAR should establish a definition of Requalification Training. It should refer to the training and/or checking needed to re-establish an individual's qualifications to serve in a specific crew capacity in which he was previously qualified. The specifics of requalification training should be left flexible to account for the reason for disqualification and/or time since last qualified in that capacity.

ITEM #9 Programmed Hours

Preamble

Programmed hours of training are specified only for initial and recurrent training in Part 121. No programmed hours are specified in Part 135, or for transition or upgrade training conducted under Part 121. While the knowledge of a planned number of hours for completion of a particular curriculum may be a practical necessity, it is the curriculum content that is important, not the utilization of specific amounts of time. Training program approvals should be based upon satisfactory subject matter treatment. However, air carrier requests for approval should be accompanied by the planned curriculum time, recognizing that this may be adjusted for individual student progress.

Recent years have seen the development of Cockpit Resource Management (CRM) and Line Oriented Flight Training (LOFT) - programs which recognize the need and provide vehicles for "crew concept" training. Furthermore, advances in simulation have permitted these programs to be accomplished in an entirely realistic but totally risk-free environment. However, the recurrent training regulations (121.433) and proficiency checking regulations (121.441) continue to be weighted toward PICs.

Recognizing this regulatory paradox, a cooperative FAA/airline evaluation of an alternative recurrent training and checking program has been in process at one major airline since 1982, under an exemption from applicable FARs. Analysis of the results of that evaluation indicates that it is time to proceed with making such alternatives more widely available within the regulatory framework.

Recommendation #12

Authorize an alternative program that would be required to include:

- o equal emphasis crew concept training and checking;
- o cockpit resource management training;
- o line oriented flight training;
- o measurement systems for tracking training and checking results and trends and validating program efficacy;
- o time specific line checks; and
- o appropriate levels of simulation.

Such alternative programs could be made available through the adoption of a FAR amendment such as suggested wording of Attachment C.

ITEM #13 Cockpit Resource Management (Draft Advisory Circular already provided to FAA)

Recommendation #13A

FAA should procure and place in public domain a body of CRM material so that all carriers may easily draw on that material in establishing or updating their own programs.

ITEM #16 FAR 121, Appendix H, Phase II "Training and Checking Permitted"

Preamble

When these provisions were enacted in 1980, there was a reluctance to authorize the unrestricted use of Phase II simulators for certain events. This was due to the then-insufficient data base of industry experience with advanced simulation.

Since the inception of the rule, Appendix H has authorized the use of a Phase II simulator for transition training. A Phase II simulator may also be used to upgrade a second-in-command (SIC) to pilot-in-command (PIC) regardless of experience in the aircraft being trained in, if the SIC meets certain criteria in terms of other aircraft flown and SIC flight time.

It is important to note that Phase II prerequisite criteria only provides authorization to train and check in a Phase II simulator instead of an airplane. It does not encroach on the absolute experience prerequisites to obtain a pilot's certificate as specified in FAR Part 61. Equally important is the fact that a carrier may now conduct virtually the entire training program in a basic visual simulator, and then complete the program in one actual airplane flight.

Over 12,000 pilots have now been trained under the provisions of Appendix H. The Joint Task Force is satisfied with the quality of the training to the extent that we believe that the pilot experience prerequisites of Phase II are no longer necessary. However, we also feel that the upgrading pilot should have obtained previous experience as a pilot with that operator.

No change is necessary to the existing authority for transition training and checking in Phase II simulators for pilot-in-command and second-in-command. However, the Joint Task Force does recommend that the prerequisite criteria contained in FAR 121, Appendix H, Phase II "Training and Checking Permitted" be amended.

Recommendation #16

Authorize the use of Phase II simulators for pilot-in-command training and, for the pilot-in-command, the certification check required by FAR 61.157 for all pilots who have previously qualified and served as second-in-command with that operator. Suggested wording is provided as Attachment D.

Recommendation #18B

FAA should, through regular mailings to all active airmen, identify problem areas and adverse trends to ensure these items receive special attention during flight operations.

ITEM #19 Authority to Provide Training

Preamble

Parts 121 and 135 as currently written do not provide a means for airmen to be trained when a certificate holder introduces a new aircraft into revenue service. This regulatory shortcoming has been addressed both by exemption and by unevenly interpreted safety policy. In addition, by exemption, many Part 135 certificate holders have been permitted to contract with training centers. This training alternative is becoming increasingly attractive to both FAA and those training departments which lack the resources to acquire simulators and other advanced training media.

Recommendation #19

Revise Parts 121 and 135 to permit certificate holders to contract with aircraft manufacturers and/or Part 121/135 training centers to provide that aircraft specific ground and flight training which currently must be provided by each certificate holder.

ITEM #20 Simulator Approvals

Preamble

The current rules are outdated in that they do not recognize the national simulator evaluation function of the National Simulator Program Manager (NSPM), which is presently addressed only by national safety policy.

Recommendation #20

Revise Sections 121.407 and 135.335 to make it clear that simulators must be evaluated and qualified by the NSPM and approved by the POI for use in the certificate holder's approved training program.

Training Working Group Attachment A

Recommendation #2

Suggested SFAR outline.

Special Federal Aviation Regulation (SFAR)

1. Statement
Offer alternative methods of accomplishing training (ground and flight), checking, qualifications and certification of pilots and flight engineers used by Part 121 and 135 operators.

Provides relief from contrary provisions of Federal Aviation Regulations 61, 63, 108, 121, and 135. If an operator elects to use the provisions of this SFAR, all that operator's training for pilots and flight engineers must be accomplished under this part.

2. Implementation
Compliance with this SFAR is specified in AC-XX.

3. Special Provisions

A. Administrative Procedures
A centralized authority will be established which will administer initial and subsequent program approvals. This approval process will be accomplished within a 60-day time frame from submission to final determination. (Changes to training programs will be considered approved unless specific denial is received within 60 calendar days.)

B. Program Analysis, Record Keeping and Reporting
All carriers exercising the provisions of this SFAR will be required to develop and establish methods of training/checking analysis which will identify trends and problems in training programs. This analysis will be made available to the FAA.

C. Simulator/Flight Training Devices
Provides for use and approval of flight training devices and flight simulators.

6/8/88

Training Working Group Attachment B

Recommendation #3

Suggested Advisory Circular Outline.

Advisory Circular 120-XX
Advanced Flight Crew Training

1. Purpose
This circular provides an acceptable means to the Administrator for approval of an Advanced Flight Crew Training Program.

2. Background
Current FARs, including Part 121, Appendix E, F, and H, do not fully recognize innovations and modern technologies available for the training of pilots and flight engineers.

Latitude must be provided to encourage carriers to become more innovative in their approach to training. This Advisory Circular will provide descriptive methods used in "Advanced Crew Training Programs" (ACT).

3. Applicability
This Advisory Circular applies to Part 121 and 135 operators.

4. Required Training Curriculums
   A. New hire initial
   B. Initial equipment
   C. Transition
   D. Upgrade
   E. Requalification
   F. Recurrent
   G. Differences
   H. Special curriculum

5. Required Qualification Curriculum Segments
   A. Proficiency checking
   B. Line checks
   C. Initial Operating Experience

6. FAA Policy for Approving Curriculum Segments
The centralized authority established by the SFAR will consider:
   A. Subject content
   B. Training hours/events
   C. Enrollment prerequisites
   D. Quality of training devices/simulators

Training Working Group Attachment C

Recommendation #12

Suggested wording to amend FAR 121.441 "Proficiency Checks" as follows:

(f) (New) Notwithstanding the provisions of paragraphs (a) through (e) of this section, all pilots may meet the proficiency check and simulator training requirements of this section on a single annual cycle provided that equal emphasis, crew concept training and checking is accomplished in one of the following alternative programs:

(1) Advanced Simulation

(a) Phase II simulation is used for annual recurrent flight training and proficiency checking;

(b) Cockpit Resource Management training for all flight crew positions is included in the approved training program;

(c) A Line Oriented Flight Training simulator period is included in annual recurrent training;

(d) List of proficiency check maneuvers and procedures or LOFT-style proficiency check scenario is included in approved training program; and

(e) Line Check required by paragraph 121.440 is accomplished in the sixth month following the proficiency check.

(2) Other Simulation or Advanced Training Devices

(a) Line Check required by paragraph 121.440 is accomplished in the sixth month following the proficiency check and is required for both pilot-in-command and second-in-command;

(b) Cockpit Resource Management training for all flight crew positions is included in the approved training program;

(c) A Line Oriented Flight Training simulator period is included in annual recurrent training, or LOFT-style crew exercise;

(d) List of proficiency check maneuvers and procedures or LOFT-style proficiency check scenario is included in approved training program.

6/8/88

Training Working Group Attachment D

Recommendation #16

Suggested Wording: FAR 121, Appendix H, Phase II

TRAINING AND CHECKING PERMITTED

Para 1. No change

Para 2. Upgrade to pilot-in-command training and the certification check when the pilot has previously qualified and served as second-in-command with that operator. Pilots qualifying under this paragraph may upgrade to another airplane in that group in which that pilot has not been previously qualified.

Flush Paragraph. Delete. (The concept has now been incorporated in the previous paragraph.)

6/8/88

Training Working Group Attachment E

Recommendation #17

Suggestions for changes to Appendices E and F

APPENDIX E

Recommendation #17A

I. Preflight - Training and checking of all flight crewmembers for aircraft preflight may be done by slide tape/film/video with demonstration of competence prior to serving as a required flight crewmember.

Recommendation #17B

II.(b) Instrument takeoff - Use carrier's operations specifications for determination of visibility settings for maneuvers in the simulator, and use RVR (where practical) as criteria for takeoffs and landings.

Recommendation #17C

II.(c), IV.(d) Cross Wind Takeoffs and Landings - Total credit should be given in a simulator approved for crosswind takeoffs and landings. The requirement for those maneuvers to be accomplished in the aircraft should be deleted.

Recommendation #17D

III.(a), 8(b) Flight Maneuvers - Delete the requirement for turns with and without spoilers and mach tuck/mach buffet. Incorporate the intent of this training in paragraph III(j), Recovery from specific flight characteristics that are peculiar to the aircraft type.

Recommendation #17E

III.(c) Maximum endurance and maximum range procedures - Delete this requirement. This item can be trained for and evaluated in ground school.

Recommendation #17F

III.(e) Runaway and jammed stabilizer procedures - Change this paragraph to address "pitch control malfunctions" and give full credit for training and checking in an approved simulator.

Recommendation #17G

III.(h) Steep turns - Delete this requirement. A demonstration of hand-flown instrument cross check competence is provided in other maneuvers.

Recommendation #17P

III.(c)(2) ILS and other instrument approaches - Definition needs to be added to give specific certification requirements for low visibility operations; specifically, requirements for CAT I, CAT II, and CAT III. Suggested wording is provided in Attachment F.

Recommendation #17Q

III.(e)(2) Missed approach - Eliminate the requirement that "At least one missed approach must be performed in flight."

Recommendation #17R

IV.(a) Steep turns, and (b) Approaches to stalls - Eliminate both these items from the requirement for checking.

Recommendation #17S

V.(d) Maneuvering to a landing ... - Eliminate the words "maneuvering to" from landing wherever it appears in Appendix F, and give full credit in a simulator approved for this item.

Recommendation #17T

V.(f) Rejected landing - Eliminate this requirement. The same pilot skills are demonstrated elsewhere in this Appendix.

6/8/88

90-170 O - 88 - 3

Training Working Group Attachment F

Proposed Modification to FAR 121 Appendix E Part III
For Inclusion of Certification to Lower than Standard Minima
Changed text is indicated by a vertical line in the left margin..

Maneuvers/Procedures	Initial Trng A/P I	Initial Trng Simulator S	V	N	T	Trans. Trng A/P I	Trans. Trng Simulator S	V	N	T	Upgrade Trng A/P I	Upgrade Trng Simulator S	V	N	T
III. (k) Instrument procedures that include the following:		B					AT					BU			
(1) Area departure and arrival															
(2) Use of navigation systems including adherence to assigned radials.		B					AT					BU			
(3) Holding		B					AT					BU			
(L) ILS instrument approaches that include the following:															
(1) Normal ILS approaches	B					AT					BU				
(2) Manually controlled ILS approaches with a simulated failure of one powerplant which occurs before initiating the final approach course and continues to touchdown or through the missed approach procedure.	B						AT				BU				
Recommendation #17H - Suggested Wording															
(3) Certification for operation to lower than standard minima:	B						AT					BU			
For Category II and/or I certification ILS approaches must be performed according to procedures and limitations for Category I and II operation as appropriate, including manual, and if applicable, automatic landings and missed approaches. If Category I															

Maneuvers/Procedures	Initial Trng A/P					Trans. Trng A/P					Upgrade Trng A/P				
	Simulator					Simulator					Simulator				
	I	S	V	M	T	I	S	V	M	T	I	S	V	M	T
(m) Instrument approaches and missed approaches other than ILS which include the following:															
(1) Nonprecision approaches that the trainee is likely to use...					B					AT					BU

Maneuvers/Procedures	Required			Permitted		
	Inst	In-Flt	Vis Sim	Non Vis Sim	Trng Dev	Wai ver
performed according to procedures and limitations for Category I operation, from one a landing will be made and from one a missed approach. For Category I and II certification at least two ILS approaches must be performed, one according to procedures and limitations for Category I operation and at least one according to procedures and limitations for Category II operation. From one a landing will be made and from one a missed approach. One Category I approach may be combined with the requirements of item (c)(2) if aircraft limitations with an engine inoperative permit, otherwise at least one additional approach must be accomplished to satisfy the requirement for item (c)(2) and for a Category I approach.						
(3) Category III approaches. If the certificate holder is approved for Category III operations, at least two Category III approaches must be accomplished annually under the following conditions- Each pilot-in-command will demonstrate two ILS approaches using Category III, limitations, simulated weather conditions, and procedures including one automatic landing and one missed approach from a very low altitude which, for some aircraft, may result in an inadvertent touchdown during the go-around maneuver. The landing must include a failure of the rollout guidance system after main gear touch down and before nose gear touch down.	9		9			
For Category I, II, or III approaches- In each case each crewmember must demonstrate his ability to perform his assigned function when acting as the pilot-not-flying. If performed in a visual simulator the system must simulate the appropriate category of weather, ceiling and						

Attachment C

Executive Summary
Man-Machine Interface Working Group
June 22, 1988

The recent and rapid introduction of advanced computer-based technology onto the flight deck of transport category aircraft has been associated with a dramatic change in both aircraft operations and the role and expertise expected of the flight crew. A growing number of incidents have brought the aviation community together to discuss the Man-Machine Interface and how this might be improved. Unfortunately, issues associated with the man-machine interface do not lend themselves to immediate solutions or "quick fixes". The recommendations in this report are, of necessity, directed at the long term but their implementation is needed now to begin an active, solution oriented program.

Summary of General Recommendations:

1) Human Factors/Human Performance must be recognized as a Core Technology. Funding, certification criteria, etc. must be allocated/developed for human factors just as they are for other core technologies (propulsion, aerodynamics, etc.).

2) Resources for the FAA and NASA, agencies with major responsibilities in aviation, must be allocated to address the human factors issues addressed in this report and in the "National Plan to Enhance Aviation Safety through Human Factors".

3) Continuing management support for coordination of the various, fragmented efforts in human factors must be provided and maintained even if the current interest in human factors and the man-machine interface subsides.

Summary of Specific Recommendations:

1) FAA should support the efforts of the aviation community to develop and implement a philosophy of automation.

2) FAA should hire human factors professionals both at Headquarters and in the regions.

3) The man-machine interface aspect of the certification process should be strengthened.

4) In conjunction with the aviation community, a study and analysis should be conducted of the need for hardware, software, and procedural standardization.

The full text contains more amplification of these recommendations.

Man-Machine Interface Working Group
Summary Report
June 22, 1988

The recent and rapid introduction of advanced computer-based technology on to the flight deck of transport category aircraft has been associated with a dramatic change in both aircraft operations and the role and expertise expected of the flight crew. Although no specific data are available on accidents or incidents related to automation technology, a growing number of incidents have brought the aviation community together to discuss the Man-Machine interface and how the interaction might be improved.

Unfortunately, issues associated with the "man-machine interface" do not lend themselves to immediate solutions or quick fixes. Problems in this area have been around for a long time and numerous conferences, symposiums, committees and organizations have dedicated considerable effort to such issues. This working group's deliberations have led to the unanimous conclusion that very little of this activity has resulted in solutions to any perceived problems, primarily because the work has not been solution oriented. While the recommendations of this report do not specify solutions, their implementation will begin an active, solution-oriented program.

BACKGROUND:

Human Factors as a discipline has only recently been accepted (and not universally) by the aviation community as a critical factor in the design and operation of complex systems. Since the majority of recent design efforts have been technology driven, (which is common with the introduction of a new technology), human factors specialists have, in most cases, not participated in the design process until the concepts and hardware were nearly complete. At this point, changes are difficult to make.

In the past, this design procedure was acceptable (although not desirable), because the technological evolution of transport category aircraft cockpits had been gradual. The operator (flight deck crew) could easily adapt to changes. However, with current automated technology, the pilot can be (and, in some ways, has been) effectively designed out of the system. This results in a conflict with the current air carrier operational philosophy which clearly states that, for the foreseeable future, transport category aircraft will require a pilot during all phases of flight operations. Furthermore, an acceptable level of redundancy dictates that there will be at least two pilots in the cockpit.

flight where it is already very low. (reference: E. Wiener, Cockpit Automation, Chapter 13, Human Factors in Aviation, Wiener and Nagel, Academic Press, 1988.)

In order to maintain an acceptable level of safety in the design of complex aviation systems, the Man-Machine Interface working group recommends the following:

RECOMMENDATIONS:

A) The FAA should work with the industry and NASA to develop and implement a philosophy of automation, particularly as it relates to the man-machine interface. This is a critical component in the continuing safety of the Nation's air transportation system and includes studying, defining, and optimizing the roles of the crew and the machine, as well as the interaction between them. The industry should move in the direction of a "HUMAN CENTERED" automation philosophy where the automation supports the human.

B) FAA should support the NASA FY89 budget augmentation, "Aviation Safety/Automation" which should be maintained at least at present levels and, if necessary, increased. It should also be funded through completion of the planned program (5 years). Any attempt to direct this program or its funding away from automation and safety should be vigorously opposed. These monies should be applied toward solution oriented research in automation and the man-machine interface.

C) The FAA FY89 budget for cockpit human factors technology should be maintained and, if necessary increased. It should likewise be vigorously defended against cuts or reprogramming. This program should also be funded for future years.

D) NASA and FAA must develop work plans for both of the above human factors/automation programs. These work plans should continue to be developed by NASA and the FAA in coordination with each other and with the appropriate knowledgeable segments of the air transport industry. (Specific recommendations about how this should be done are contained in issue 2 below.).

E) FAA should support NASA in its plans to hold an industry wide workshop on flight deck automation. The workshop should include participants from the manufacturers, pilots, air carriers, controllers, academia, FAA and NASA. The purpose of the workshop should be to

C) A Steering Committee should be formed on Aviation Safety and Human Factors with policy representation from industry and government (Associate Administrator level).

D) This Steering Committee should be supported by a Technical Group with representation from all knowledgeable segments of the civil air transportation industry and government. This Technical Group would coordinate and promote the development of human factors programs in the public and private sectors and would also periodically report to the Steering Committee. (Note: This Group could be based on an existing group that has broad representation.)

E) The development and implementation of the "National Plan to Enhance Aviation Safety Through Human Factors" which is being prepared by the ATA Human Factors working group in conjunction with members from ALPA, NASA, FAA, TSC, NTSB, APA, and the airframe manufacturers, should be supported and implemented by FAA and NASA.

F) Funds must be made available to support these efforts.

3) HUMAN FACTORS as a CORE TECHNOLOGY:

ISSUE:

Fundamental technologies in the development, design and certification of transport aircraft traditionally include aerodynamics, propulsion, and structures. Considerable testing is conducted in these areas to assure that aircraft meet specifications. These technologies have been well developed over the past 30 years and are well understood. Few accidents currently occur due to failures in these areas. However, many accidents/incidents are attributed to human error, yet human factors as a technology does not receive a commensurate level of funding in the research, development, or certification process. If a long term solution is to be found for human/machine interface issues, human factors must be acknowledged as a core technology by the aerospace community including FAA, NASA and the industry.

The potential impact of these limitations in the certification process is particularly important because of the changes brought about by the automated environment. Also there is a definite inconsistency among interpretations of the certification requirements by the FAA regional offices that can no longer be tolerated.

RECOMMENDATIONS:

A) **Standards for Certification of Flight Crew Interfaces.** The FAA, in cooperation with industry and other government agencies, needs to examine the existing body of human factors knowledge and to develop a basis for revising both FAR 25 regulations and preparing Advisory Circulars. Areas where existing knowledge is insufficient need to be identified and appropriate studies conducted.

It is essential that any changes in the certification process be accomplished in conjunction with the relevant industry groups. The application of these changes must be timed to permit adequate industry review and scheduled far enough in advance for manufacturers to incorporate changes into the design.

B) **Consistency of Appiication.** The certification process should be changed where necessary to assure that decisions are based on appropriate criteria and to eliminate the variations in interpretation that result under the current process. As part of this effort, the certification standards and criteria should be rewritten to provide for a consistent and well defined certification process that includes criteria based on human performance.

C) **Automation.** Criteria for automated systems, information transfer, and alerting systems need to be developed.

D) **Modifications to certified equipment.** The FAA should assure that application of criteria used in the certification of modifications is consistent with, and as rigorous as those used during the initial certification.

E) **FAA human factors personnel.** Qualified human factors personnel need to be hired in the FAA certifying regions as well as at the Headquarters level.

F) **Foreign Certification.** The FAA should take the initiative to compare the approaches of U.S. and foreign manufacturers regarding

6) COCKPIT STANDARDIZATION:

ISSUE:

The cockpit standardization issue is a complex one. It is not easily addressed in general terms because the range of options and associated implications is very broad. Fundamental decisions on the appropriate level of standardization inherently must address a range of factors. In principle, standardization of procedures/hardware can reduce the potential for human error. Alternatively, some forms of standardization could preclude the introduction of improvements onto the flight deck. In addition, there are some existing efforts concerning standardization issues as well as potential methods for improvement which must be considered.

In recent times, the combined effect of technological improvements, mergers and deregulation has necessitated changes in the traditional means used by airlines to maintain an appropriate level of standardization. In the past, an airline could elect to retain its original aircraft configuration, but advancing technology and mergers have resulted in fleets composed of different models, modifications and specifications for aircraft of the same, as well as different, types. The situation is further complicated by the fact that the same hardware can function differently with only a minor software change.

A related factor is the training needed to assure adequate flight crew performance in aircraft with different configurations. The FAA, in conjunction with industry, is addressing criteria for differences training, checking, and currency (the ad hoc working group on the crew qualification advisory circular). Their current approach is to develop a systematic process that can be used to evaluate derivative models and non-standard cockpits within models, to establish requirements for flight crew training, checking and currency. When the necessary difference training reaches a predetermined level, a new type rating could be required. This approach will consider system differences, cockpit configurations, handling characteristics, etc.

Another factor is the degree of standardization currently applied by the airlines today. Many carriers implement standardization of procedures and policy. Procedural standardization can assist in bridging the gap between various manufacturer's design concepts. As a result, flight crew members with an extended career with one carrier may develop strong

RECOMMENDATIONS:

A) A thorough study, which includes a survey, should be conducted to document existing and proposed methods used by the industry to achieve standardization for both cockpit layout and procedures. The survey should include air carriers, manufacturers, line pilots, and avionics manufacturers. It should develop guidelines for effective ways to achieve appropriate standardization. (Refer also to the operations working group recommendations, p.2 number 3.)

B) The study, together with information on human factors/human performance should be analyzed to determine the fundamental characteristics needed for standardization to minimize the potential for human error. Guidelines should be developed to determine appropriate levels of standardization and related training.

C) When appropriate, industry and government workshops/working groups should be convened to advise on the approaches being addressed and to assist in the development of criteria.

Joint Government/Industry Task Force
on Flight Crew Performance
Man-Machine Interface Working Group

Members:

Mr. Donald D. Alexander
Engineering Test Pilot
FAA

Captain Michael Ballard
America West Airlines

Captain Rob Costello
Chief Pilot
America West Airlines

Captain Wendell Dobbs
American Airlines

Mr. Bill Edmunds
Human Performance Specialist
Air Line Pilots Association

Mr. E.V. Fretwell
Air Line Pilots Association

Captain Mel Hoagland
Air Line Pilots Association

Dr. M. Stephen Huntley, Jr.
DOT/TSC

Mr. Paul Istock
Air Line Pilots Association

Captain Al Mattox, Jr.
Allied Pilots Association

Mr. Bill Russell
Director - Flight Technology
Air Transport Association

Attachment D

OPERATING ENVIRONMENT RECOMMENDATIONS
EXECUTIVE SUMMARY

The Operating Environment Working Group included representatives from pilot organizations, major air carriers, NASA, NTSB, FAA, and commuter airlines.

Many of the issues addressed by the working group were those which involve the interaction of cockpit crewmembers both within the cockpit and with elements of the air traffic control system.

The recommendations address the following areas:

- Cockpit Standardization
- Cockpit Discipline
- Operational Deviations
- NMAC Risk
- Pilot/Controller Communications
- Attitudinal Problems
- Over Reliance on Automation
- Automation

6/8/88

Operating Environment Recommendations

COCKPIT STANDARDIZATION

There are two elements to cockpit standardization: hardware and procedures. Procedural standardization is made considerably easier by the existence of standardized cockpit hardware.

Airline merger activity as well as the acquisition by a carrier of similar aircraft present individual airlines with standardization problems in both hardware and procedural areas.

Airlines must seek optimal standardization of hardware within fleets, and to the degree possible among fleets within a carrier. Training departments must develop training programs to achieve procedural standardization through the training and checking process. Instructors must themselves be trained in standardized procedures. Many Part 121 and Part 135 operators do not have formal instructor training or follow-up training requirements.

Recommendations

1. Carriers must develop quality training programs designed to enhance standardization. These programs must start with an effective training process for instructors with follow-up instruction to ensure standardization among instructors. (See related Item 18 in Training Working Group recommendations.)

2. Sharing of information in cockpit standardization procedures among carriers is beneficial in identifying the best procedures for each individual carrier. Information can be shared through the ATA Training Group.

3. The FAA should commission a separate human factors study to determine the impact of non-standard cockpit configuration on flight crew performance. This study needs to address the magnitude of the problem, the need to upgrade standards to reflect current technology, and the requirement to develop new standards, if needed. (See related Item 6B Man-Machine Interface Working Group recommendations.)

a clear need for division of duties in the cockpit, especially in the two man cockpits. Air carrier flight departments should clearly define in the Operating Manuals the duties for the "Pilot Flying" and the "Pilot Not Flying," particularly in critical phases of flight, i.e., take-off, approach, and landing. Routine affects the cockpit environment, so renewed emphasis needs to be placed on over reliance on the system, both aircraft and Air Traffic; in short, a return to the philosophy of basic flying skills. Renewed emphasis should be placed on being alert during periods of marginal VFR conditions, accepting a visual approach, making a non-precision approach, and landing at uncontrolled airports.

Recommendations

1. Each Air Carrier should develop Crew Resource Management Programs tailored to their own philosophies. The main purpose should be to develop leadership, command responsibility, and encourage inter-cockpit communications. (See CRM draft AC provided FAA March 9, 1988.)

2. Recurrent training programs should place a renewed emphasis on checklist discipline. (See related Item 18 in Training Working Group recommendations.)

3. The FAA should strongly encourage all carriers to explore the feasibility of using a Mechanical Checklist, or equivalent, for take-off and landing for all types of aircraft. The FAA should consider requiring this to become a part of the operating rules.

4. Develop a philosophy of division of duties in the cockpit as in the "Pilot Flying" and the "Pilot Not Flying," particularly in critical phases of flight. The FAA should consider this philosophy for incorporation in air carrier's Manual.

5. During training and checking, emphasize the use of all electronic and visual aids during marginal VFR conditions, visual approaches, non-precision approaches, and landings particularly at uncontrolled airports. (See related Item 18 in Training Working Group.)

OPERATIONAL DEVIATIONS

Crew

Background and Discussion

In order to address the problem of operational errors by flight

Controller

Background and Discussion

Operational errors on the part of controllers are due in part to the increased strain on the entire ATC system with too little increase in manpower and a lack of needed funding for modernizing and maintaining the system. We must all work together - management, labor, industry, and government - to secure needed increased funding for the ATC system. The publication "A Call to Action" was such a concerted effort and all the recommendations set forth in that publication should be considered for implementation.

Since the controllers strike in August, 1981, the number of controller initiated NASA/ASRS reports has decreased dramatically. Controller reports now comprise less than 5% of the total monthly reports. This is not enough data to produce any constructive analysis of controller ATC problems in the system. Consequently, the effectiveness of the NASA/ASRS program suffers. Controller immunity should be honored and the FAA should actively encourage controller participation in the program without fear of reprisal. Controller education about ASRS is lacking, however, and the FAA should get behind this educational effort.

Funding for the NASA/ASRS was recently increased from $1.5 million to $1.9 million annually. The increase had been sought because the number of reports had risen from about 200 per month to over 800 per month. The volume of reports was just too great to be handled adequately under the $1.5 million funding. Now, the number of reports has risen in excess of 2000 per month. A complete narrative of each report is valuable for the in-depth analysis required in producing meaningful data which pinpoints problems in the system. Again, a concentrated effort needs to be mounted to seek increased funding for this valuable FAA sponsored program. In addition, more funding is needed in the NASA budget to utilize the data and to initiate workshops to explore ways to improve the ATC system and to deal with automation problems.

Recommendations

1. Continue to mount a concerted effort to consider all the recommendations set forth in the publication "A Call to Action."

2. Send two (2) ASRS forms and a copy of the Advisory Circular No. 00-46C dated February 4, 1985, to all pilots and controllers who hold an active FAA Medical Certificate.

3. Call for increased funding in the FAA budget to ensure that data under the NASA/ASRS is adequately processed and utilized.

6/8/88

2. The FAA formulate a rule which would require all aircraft flying in airspace where TCAS equipped aircraft operate be equipped with a transponder with an altitude encoder. This requirement should coincide with required carriage of TCAS on air carriers.

3. More controllers must be hired and trained to handle the increasing volume of traffic.

PILOT/CONTROLLER COMMUNICATIONS

Background and Discussion

Communication between pilots and controllers is a problem which must be dealt with as traffic continues to grow. There is a need for pilot and controller discussion on this issue. Strict communication discipline by both pilots and controllers would assist in relieving some of the strain in the system. Some of the problems are "stepped-on" communications, similar call signs, non-standard radio phraseology, missed calls, clearance read back errors not detected, accepting the wrong clearance, etc. The best and most effective near term fix is, of course, education on better cockpit discipline through FAA publications, Flight Safety Foundation and aviation schools. The FAA should produce a quality video for wide use by air carriers, FBO's, and other training facilities emphasizing the problems and how to improve communications by using standard communication terminology. Emphasize back to the basics on communications and communications courtesy.

The "stepped-on" communications problem has been given to RTCA for research. Even though this is a long term fix, there are several communications blocking devices available. A fix could be forthcoming very soon.

Recommendations

1. FAA prepare a quality video for distribution which emphasizes problems and how to improve standard communications terminology. The video should address problems such as "stepped-on" communication, similar call signs, non-standard phraseology, missed calls, clearance read back errors not detected, accepting wrong clearance, etc. Scenarios should be developed which depict the right way and wrong way of communicating and show examples of controllers misusing the foot mike button by talking prior to pressing the button. Emphasis should be on "Back to Basics" communication. Wide distribution of the video should be given top priority. The video should be used by the FAA, FBOs, air carriers, and aviation educational institutions as a training aid for pilots and controllers in developing strict communications discipline.

6/8/88

Over Reliance on Automation

Background and Discussion

Since the introduction of automated cockpits, there is a constant challenge to cope with a decrease in basic piloting skills. Today's air carrier pilots are taught to operate and rely on the automation in the cockpit from the first day of their training. The criteria used by the FAA during a rating ride is to test the pilot on how well the pilot operates the automated systems, rather than checking his basic piloting skills. An Air Force General recently said, "the Air Force accident rate is going up because pilots are taught to pass the check ride. Instructors are just not being instructors and they are not teaching proficiency flying." The same problem exists in air carrier training and probably every training facility in the U.S. The message is clear - we must return to the basics of teaching flying and how to remain proficient in flying.

Pilots want to keep their basic flying skills fine tuned, but they also must maintain their proficiency in managing automated systems. Air carriers should establish a policy which encourages pilots to hand fly automated aircraft in order to fine tune their piloting skills.

Recommendations

1. More emphasis should be placed on checking basic piloting skills during a check ride, in addition to testing a pilot's ability to operate the automated systems. (See related Item 18 in Training Working Group recommendations.)

2. Pilot training programs must include periods of raw data training. Teach "back to basics" flying. Establish effective instructor training programs to enhance and improve training programs. (See related Item 18 in Training Working Group recommendations.)

3. Air carriers should establish a policy which encourages a pilot to periodically <u>hand fly</u> the <u>aircraft</u> in order to fine tune basic flying skills. (See related Item 18 in Training Working Group recommendations.)

AUTOMATION

Background and Discussion

Automation is intended to decrease the workload, but some automation has produced the opposite effect. It appears the philosophy of automated cockpits is to teach the pilot to set up the automation and to sit back and monitor the system. However,

Air Transport Association ata OF AMERICA

1709 New York Avenue, NW
Washington, DC 20006-5206
Phone (202) 626-4000

March 9, 1988

The Honorable T. Allan McArtor
Administrator
Federal Aviation Administration
800 Independence Avenue, SW
Washington, DC 20591-0001

Dear Mr. McArtor:

Enclosed with this letter is the first product of the Joint Government/Industry Task Force on Flight Crew Performance.

As you know the Task Force was formed at the request of the Federal Aviation Administration in August, 1987. Each of the Task Force working groups has met several times since then. The Training Working Group, the largest of the three, divided its issues among three separate groups within the Training Working Group. Those assigned to the Cockpit Resource Management/Line Oriented Flight Training Working Group have completed their task. The Steering Committee (which includes representatives of each of the involved organizations) reviewed their product, which is in the form of a draft Advisory Circular, and with unanimous agreement as to its content, is forwarding it via this letter to FAA for consideration.

Some additional information is also provided to assist in understanding the content and evolution of the draft Advisory Circular. A list of these items is included as Attachment A.

All those who are involved with the Flight Crew Performance Task Force are pleased with the progress of the various elements of the Task Force. We anticipate providing you with additional findings and recommendations soon.

Sincerely,

WS Coleman

Walter S. Coleman
Secretary
Joint Government/Industry
Task Force on Flight Crew
Performance

Attachments

Attachment A

Joint Government/Industry Task Force
on Flight Crew Performance

Contents

Transmittal Cover	Attachment B
Cockpit Resource Management Advisory Circular Summary	Attachment C
Draft Cockpit Resource Management Advisory Circular	Attachment D
December 11, 1987 Letter from CRM/LOFT Chairman to Training Working Group Chairman	Attachment E
CRM/LOFT Working Group Membership	Attachment F
Steering Committee Organizations	Attachment G

Attachment B

Joint Government/Industry Task Force
on Flight Crew Performance

Item Transmittal

Item: Cockpit Resource Management Training Draft Advisory Circular

Working Group: Cockpit Resource Management/Line Oriented Flight Training (under Training Working Group)

Intent: FAA Issue Advisory Circular on Cockpit Resource Management Training Incorporating Contents of Provided Document

Attachment C

Cockpit Resource Management Training Advisory Circular Summary

Cockpit Resource Management (CRM) is the effective utilization of all available resources, hardware, software and liveware. While there are many approaches and techniques useful in CRM, a CRM training program should focus on the functioning of crews as intact teams and include at least three distinct phases: awareness, practice and feedback, and a continual reinforcement phase.

The draft Advisory Circular provides brief descriptions of the phases, and provides NASA resource document references.

Attachment D

AC: XXXXXXXX

Date: XXXXXXXX

ADVISORY CIRCULAR (DRAFT 1.2)

CRM/LOFT Working Group
Training Subcommittee
Joint Government Industry Task Force
on Crew Performance

December 14, 1987

Subject: COCKPIT RESOURCE MANAGEMENT TRAINING

1. PURPOSE.

This circular sets forth one means that would be acceptable to the Administrator for approval of a cockpit resource management (CRM) training program. The primary objective of CRM training is the prevention of crew-related incidents and accidents. This circular describes the essential elements of a CRM training program, and provides guidance with regard to program development.

2. BACKGROUND.

Over the last decade, an increasing amount of evidence has accumulated suggesting that between 60 and 80 percent of air carrier incidents and accidents have been caused, at least in part, by a failure of the flightcrew to make use of readily available resources. A long-term National Aeronautics and Space Administration (NASA) research program has demonstrated that these types of incidents have many common characteristics. One of the most compelling observations of this program and other research studies is that often, the problems encountered by flightcrews have very little to do with the more technical aspects of operating a multi-crewmember aircraft, but are associated with poor group decision-making, ineffective communication, inadequate leadership, and poor management. In addition, most training programs emphasize the technical aspects of flying almost exclusively, and do not deal effectively with various types of crew management strategies and techniques that are also essential to safe flight operations.

These observations have recently led to a developing consensus in both industry and government that more training emphasis needs to be placed upon the factors that influence crew coordination and the management of crew resources. Briefly defined,

4. TRAINING PROGRAM.

Awareness

Awareness is an essential first phase and usually consists of instructional presentations focusing on the roles of interpersonal and group factors in the maintenance of crew coordination. It is important because it provides a common terminology and a conceptual framework for crewmembers to begin thinking about crew coordination problems and how such factors have contributed to aviation tragedies and near tragedies in the past. A useful way of beginning the awareness phase might include the development of a curriculum addressing CRM skills that should be acquired such as: 1) Communication (e.g. cultural influences, barriers such as rank, age and position, assertiveness, participation of all crewmembers, cockpit-cabin crew coordination, listening, feedback, and legitimate ways of expressing dissent); 2) Situation Awareness (e.g. reality vs. perceptions of reality, fixation, monitoring, incapacitation); 3) Problem Solving/Decision-Making/Judgement (e.g. conflict resolution, review); 4) Team Management (e.g. team-building, managerial skills, authority, barriers, cultural influences, roles, workload management); 5) Stress Management (e.g. fitness to fly, fatigue, incapacitation); 6) Team Review (e.g. pre-mission analysis and planning, critique, ongoing review, post-mission); and 7) Interpersonal Skills (e.g. listening, conflict resolution, and legitimate avenues of dissent).

Other useful techniques might include computerized instruction, pre-work prior to classroom instruction, detailed case studies of accidents and incidents looking for crew performance issues, and utilizing videotape examples of good and poor team behavior in the cockpit. The exposure of line and training check airmen is a critical part of CRM training and has also proven to be beneficial in heightening awareness in an organization.

Awareness promotes credibility and helps in changing attitudes, however, it is important to recognize that it is only a necessary first step. Many programs rely almost exclusively on this aspect of training, but classroom instruction alone will probably not fundamentally alter crewmember attitudes and behavior over the long term.

Practice and Feedback

The second phase of CRM training is practice and feedback. Some programs use role-playing techniques to provide group skills practice, as well as personality and attitude measuring questionnaires as a means of providing feedback to individuals about their own interpersonal styles. Personality and attitude measures are useful ways of providing feedback to many individuals on dimensions they probably have not objectively evaluated. In addition, they sometimes allow individuals to recognize some of their strengths and weaknesses. Role-playing or group exercises can provide useful practice in areas of crew decision-making and the other skills discussed in the CRM curriculum presented in the awareness phase. Further review of videotaped examples of excellent team leadership in both low and high workload flight regimes is another good practice technique.

Line-Oriented Flight Training (LOFT, as defined by AC 120-35A and NASA CP 2184) is a well-proven method of providing practice and feedback in crew coordination

training only for the "managers" or captains. However, this notion misses the essence of the primary CRM training objective—the prevention of *crew-related* incidents and accidents. It will be most effective in the entire crew context, and this requires training exercises that include all crewmembers working together and learning together. In the past, much of flightcrew training has been separated by crew position, and while this may be effective for certain types of training (e.g. technical skills and systems knowledge, etc.), it is not as appropriate for CRM training.

5. FUTURE ACTION.

This Advisory Circular does not provide specific directives for the conduct of CRM training. One reason is that CRM training programs are still evolving, and the Administrator seeks to foster the development of this concept as much as possible, without limiting it under specific directives. However, it is believed that the three-phase program outlined in the current circular contains the necessary ingredients.

A comprehensive research program that seeks to assess the effects of CRM training has begun under NASA sponsorship in cooperation with organizations currently conducting CRM training programs. This program will track developments and safety trends associated with CRM training over time. The results of this research program are expected to shed further light on the effectiveness of various CRM training techniques. Future action may be based, in part, upon the results of this investigation.

Efforts are also underway to develop a "model" CRM training program that can be utilized by all operators in the development of their programs. This program would be available in whole or in part, and would make available a specific curriculum, materials, and techniques suitable for both FAR Parts 121 and 135 operators.

Further regulatory action in this area is anticipated, but it is expected that future actions will be consistent with the guidance provided in this Advisory Circular.

Attachment E

December 11, 1987

TO: Dick Collie, Chair, Training Committee

FROM: Clay Foushee, Chair, CRM/LOFT Working Group

SUBJECT: December 10 Meeting and Recommendations

I am writing this memo to summarize the final recommendations of our working group regarding CRM and LOFT. For the most part, we feel that we have accomplished the practical short-term objectives, and that future action in this area should be coordinated with the larger training committee. Thus, our recommendation is that our members work with the "121/135 Rewrite" and the "Flightcrew Qualifications" groups as a means of integrating CRM and LOFT applications into the FARs. We have no immediate plans to meet again, but would be happy to do so if you and the Training Committee feel there is a need. Our recommendations follow.

1) We recommend that a general FAR requirement for CRM should be established. Initially we felt that the best way to do this would be to establish a new and separate CRM item within the FARs. However, after further deliberations, we felt the best way to do this would be to incorporate CRM principles and references to CRM techniques (e.g. LOFT) into the overall body of 121/135 rewrites. We also felt we could not make a concrete recommendation without reference to the other Training Committee rulemaking activities. Thus, our recommendation is amended to encourage the other Training Committee working groups to identify and establish those areas where appropriate FAR references should be made to crew coordination training. CRM is still an evolving concept so these FAR revisions should be made in a general way and should reference to the CRM Advisory Circular for further details. Members of our working group will be working with the other groups to accomplish this task.

2) The Advisory Circular was revised based on the comments of our members, and the new version is attached. We are now in agreement that it is almost ready to be turned over to the Administrator (pending final comments of the Training and the Steering Committees). It seeks to specify the phases and general types of concepts and techniques that are necessary to properly do CRM (given what we know now). It refers to the need to do a phased approach that is reinforced in recurrent training. Part of the rationale here is that it be specific enough to dictate the phases, but general enough to allow a lot of creativity in

recommend that the inconsistencies between 120-35A-type LOFT and Appendix H LOFT be reconciled, and that guidelines for different types of LOFT applications be generated. These should specifically address applications of LOFT to upgrade, transition, and initial training, and the need to maintain the crew concept to the extent possible. As a minimum, we recommend that if substitutes who are not line or seat qualified are utilized, they be given special training in order to adequately fulfill the LOFT realism requirement. These issues can only be adequately addressed in cooperation with the other Training Committee working groups.

That's the essence of what we're thinking. I'll talk to you soon to coordinate other activities.

Clay Foushee

Attachment B

Joint Government/Industry Task Force
on Flight Crew Performance

Attendance List
May 2, 1988, ATA Headquarters

C. R. Paty	Allied Pilots Association
E. V. Fretwell	Air Line Pilots Association
J. O'Brien	Air Line Pilots Association
W. S. Coleman	Air Transport Association
P. R. Rach	Air Transport Association
W. M. Russell	Air Transport Association
S. Huntley	Department of Transportation/TSC
D. Beaudette	Federal Aviation Administration
D. Catey	Federal Aviation Administration
G. Tinsley	Federal Aviation Administration
S. Norman	NASA-Ames Research Center
W. Reynard	NASA-Ames Research Center
R. Collie	Regional Airline Association
J. Fredericksen	Regional Airline Association
W. Traub	United Airlines

Attachment C

Joint Government/Industry Task Force
on Flight Crew Performance

Chronology of Events

1987	Event
August 27	Administrator McArtor Speech to Airline Chief Pilots in Kansas City
September 10	Steering Committee Organized (ATA, FAA, ALPA, APA, RAA, NASA, NTSB)
September 24	Steering Committee Reviews Agenda and Issues
October 1	Plenary Session. Working Groups Established
November 18	Administrator McArtor is briefed on Task Force Efforts by Two Working Group Chairs and Steering Committee Representatives
November 19	Second Plenary Session. Report by Working Group Chairs on the Status of their Assignments
1988	
February 11	Steering Committee Meeting
March 9	Cockpit Resource Mangement Draft Advisory Circular Provided to Administrator McArtor
May 2	Steering Committee Meeting
June 8	All Task Force Recommendations delivered to Administrator McArtor.

Mr. OBERSTAR. My information and the statistics that the staff has gathered indicate that as of March 1988, of the 5,300 commuter pilots flying, roughly, 4,000 of those were hired within the last year. Do you have that same number?

Mr. KERN. That sounds very, very accurate to me. I've been in a number of meetings in the last year, both with the large air carriers and the commuters. The academic industry is now seeming to pick up the load of pilot training as the military seems to be phasing out of it. I've heard those numbers or similar numbers at a number of those meetings.

Mr. OBERSTAR. On the one hand, the commuter airlines are kind of a training ground for the majors, and the pilots in a sense are graduating or moving on from the commuters to the majors as they expand and they have greater demand for pilots. Both through retirement and expansion of operations, there is continued pressure on commuters to bring new people in with a resulting impact on crew performance, operation, and qualification of pilots.

Mr. Beaudette, do you have anything to add to that?

Mr. BEAUDETTE. As Mr. Kern said, I agree that to a person in the FAA we have recognized the change that is going on in the environment and do not accept our past track record or past regulations as being adequate for the challenges that we're going to face in the future. The numbers sound consistent with what we hear.

I would just like to highlight the significance of having not just the FAA doing problem-solving in this area, but the activity that took place in the recent past—that Mr. Kern just mentioned. We had the best people we could find take a look at our training and checking rules for the express purpose of seeing what we could do to make them better for the future, recognizing that they've done a pretty good job for us to date.

Adding to what Mr. Underwood said, the things that we've found in our rules today are that if you stress checking as opposed to a balance of checking and training, they do use the airplane, which was the major training aid we had 15 or 20 years ago, as the baseline for training and checking, rather than simulators. They do focus on crewmembers as individuals as opposed to focusing on the capabilities of the crew in an entity.

As I said, the rules as they are written right now do have limited flexibility. As we picked through those rules it was tough to find the good ones where we didn't want flexibility, but to find areas where in fact there was perhaps a chance for some flexibility to be good. When the recommendations came out of that task force they called for two or three major things: one, a recognition that the two-pilot commuter operation training and checking did need to be upgraded, and we are working on that; two, that cockpit resource management training needed to be a requirement levied by the FAA. We could no longer leave it to voluntary compliance, although we found a lot of companies doing a lot of good things.

The pilots as individuals are in a different environment now and we need to make sure that they understand that the people in the left seat are resource managers. They are no longer the single and only person responsible for the safety of flight. In adding cockpit resource management training to their curriculum, for the first time we require them to talk about communication, decision-

making, judgment, make sure that just as you stated, Mr. Chairman, three people aren't solving one problem while no one is flying the airplane.

That same kind of training is important for the first officers and especially important if they are new in the system; that they don't treat the rest of the crew in awe; that they learn how to speak up; to be advocates for safety; to make sure that if they see a problem they bring it to the attention of the rest of the crew and not let it be overlooked.

So there is a whole new arena of training we're going to get into in cockpit resource management, focusing on crew performance.

One of the things that has held both the FAA and the industry back a little bit in the commuter ranks is that the best vehicle to do that kind of training is a simulator. It is tough to put a crew in a stressful environment, let them work through it as a crew, and then go back and critique themselves in an airplane. You can't do as much to them. You can't expose to them as much.

So one of the challenges facing us and one of the things that will come out of these recommendations is the establishment of better training devices for commuters, lower level training devices. They don't need to have visual systems and motion systems. They need to replicate the airplane that the crew is flying. If the FAA, working with industry, can make these devices available, we'll have a vehicle to provide better training for the crews. I think in the short term that means we'll have to focus more on using training centers. They're in existence right now; smaller operators can't all go out and buy their own simulators, but they can pool together and use training centers. Our rules don't clearly recognize that.

So some of the things that we'll be changing in the short term—hopefully we'll be adding to the training and checking capabilities that we have now to make the time that the crew members spend today much more beneficial to them in terms of functioning as a crew, and it then doesn't matter so much if individuals come and go from the system if they all were taught the same crew philosophy for problem solving. Just due to the complexity and the nature of this, I think you will find that the smaller airplanes are always going to be the entry-level vehicles for the larger system, and that's not bad. That's a good place to learn in a controlled system.

I think that between the FAA and the folks that Mr. Kern mentioned who participated in this study, and a followthrough effort to which we are very committed, that in the very near future we can provide a much better training system for the pilots who are out there in today's environment. And I think what we're seeing in this study just reinforces that. It all seems to fit very nicely.

Mr. OBERSTAR. Thank you very much, Mr. Beaudette. That's very encouraging. I'm a very strong proponent of simulators. I have witnessed a number of them, sat in them and been put through the paces myself. I fully realize and appreciate the realism that can be created within a simulator.

I'll have further questions. We'll have several rounds of questioning so I want to yield at this time to the gentleman from Pennsylvania.

Mr. CLINGER. Thank you very much, Mr. Chairman.

Thank you, Mr. Kern and gentlemen, for your testimony this morning. I understand that you have now looked at about 29 of the 35 carriers that you intend to inspect in this Phase Two of the special emphasis. I'd like to get some sense of how many of those you would give an "A" to in terms of all the things you looked at in terms of airworthiness, crew proficiency, etc.; how many a "B;" how many a "C?" In other words, what was the breakdown? Obviously there is a differential among the 29; some are doing a better job than others. Are more of them doing a better job or worse job?

Mr. KERN. Sir, I wish we had tabulated them like that. We simply tabulated the findings.

An indicator, as I said in my statement, might be that we've begun about 204 enforcement actions on those 29. Those are the initial investigations that may result in some kind of civil penalty or some kind of other action.

Mr. CLINGER. Was it fairly consistent across all the 29 carriers?

Mr. KERN. Let me ask the experts who participated more closely, or any of the other FAA people here, if they have a more precise answer. If not, we will have that kind of an answer when we get our final report done in early to mid-December.

Let me ask if anybody else would comment.

Mr. BEAUDETTE. We don't use the terms you asked for, I'm sorry to say. In reviewing the data, and last night I looked at the manual date from over 20 carriers but less than 29, looking for trends, looking for numbers, some of it not operator-specific I think given the way that the inspection started when we did hit a couple of bumps, I'm more generally pleased with what I saw than not, especially when I think that a fair amount of what we're seeing there can be attributed to lack if understanding and lack of communications. Some of the things that we can correct ourselves within the FAA in terms of spending more and better time with the carriers in terms of finding people out there—violations that tend to indicate that people either don't know what they're doing or are deliberately not complying with the rules—again, just my words in running through raw data, I didn't see anything there that I would consider to be alarming as a group.

I think we're finding areas that consistently can be giving people problems, and they're areas that we're going to be able to concentrate on, but just as a general reaction it was the first time I had seen mass raw data from the carriers. I think it was better rather than worse.

Mr. CLINGER. There were not a lot of what we might call "fly by night" operations, then?

Mr. BEAUDETTE. No, not that I could tell from looking at that data, no, sir.

Mr. CLINGER. I did note in your testimony, Mr. Kern, that two or three of the carriers that you were proposing to examine voluntarily gave up their operating licenses?

Mr. KERN. Yes. Let me just amplify that a little bit.

The primary reason for that was that some of them had gone dormant and were no longer using their licenses, and in the other case some of the operators, because they had grown and acquired larger aircraft, had actually been recertificated under Part 121 and at the same time had kept their Part 135 certificate.

I was just informed, though, that there was at least one operator out of our list that we might put in the category of questionable. I learned just this morning that we've sent them a letter proposing a revocation of their certificate. They have 30 days to respond to us with reasons why that should not happen, but that's the only one that I'm aware of or that the team is aware of at this time.

Mr. CLINGER. Prior to the time you started this special emphasis study and so-called "white glove" inspection, can you give me an idea of what the routine surveillance or monitoring by the FAA of the commuter carriers is or was?

Mr. KERN. Sure. Let me answer that from the policy level and then ask the inspectors to give you their impressions.

Several years ago we developed our national program guidelines document that spelled out a mandatory required number of inspections on all air carriers, repair stations, and other kinds of operators. So we do have a nationally-mandated work program as of about 1985 that requires a certain number of inspections based on the size of the carrier, the number of pilots, and other kinds of environmental issues.

Now, if it's okay with you, sir, let me have both Mr. Underwood and Mr. Morantes give you their impressions of the routine surveillance of the 135 carriers.

Mr. CLINGER. Please.

Mr. UNDERWOOD. As Mr. Kern had said, for the last several years we've had the national program guidelines for determining the numbers and types of inspections based upon the complexity of the particular operator. In addition to that we have added inspections as we saw them necessary based upon our personal knowledge of the particular operator. Maybe the operator has had a period of high turnover, for instance, higher than normal turnover of crews, so we may accelerate certain types of inspections, like observing their check pilots and things like that.

But we do have the national program that we have to adhere to, plus additional inspections that we feel are necessary.

Mr. CLINGER. As a result of the present exercise, the three-phase special emphasis, do you see a need to increase that or change that in any way from what has been the practice in the past?

Mr. UNDERWOOD. Is your question do we need to continue or increase the national inspection program?

Mr. CLINGER. Right.

Mr. UNDERWOOD. I believe that we do because until this program came along, the types of inspections possibly were not as in-depth as we are able to do now. The philosophy of using a team and having a period of time to work with it allows you to do much more in-depth inspections, so we have found things that possibly existed in the past but we simply never found them.

Mr. CLINGER. Mr. Morantes, do you have anything to add to that?

Mr. MORANTES. Yes, sir. We conduct regular surveillance on our operators depending on the complexity of the operator. We go out there and go over their manuals, go over their tools, make sure that they are calibrating their tools as required, ensure that they are doing the work in accordance with the air carrier manual, and certify that the people are qualified. We get out there and look at

the aircraft that are undergoing inspections, make sure that the people are using the manufacturer's manuals and doing the work in accordance with the manuals.

Mr. CLINGER. How often?

Mr. MORANTES. Let's say I've got an operator. Maybe I go up there three times a month.

Mr. CLINGER. Three times a month?

Mr. MORANTES. Three times a month. It all depends. We have other inspectors in the office who have operators with more complexity and maybe they go up there five times a month. They go to this particular operator and they look at certain areas, specifically if you find areas that you notice are deteriorating and require more attention, and then you go out there and talk to them about it.

Mr. CLINGER. Do I understand that this would apply to all Part 135 carriers that would receive this, either three times a month or more often——

Mr. MORANTES. Well, as an example, if we've got an operator that has nine or less Type 2 aircraft and is really "on demand," then our priorities are not as strict on him. But we look at him maybe once every two months or so.

Mr. OBERSTAR. Will the gentleman yield?

Mr. CLINGER. Certainly.

Mr. OBERSTAR. On the point of increased inspections in your comment, Mr. Underwood, that inspections in years past were not as in-depth as we're doing now, are there some other activities that your office or respective staff may be cutting back on or even neglecting in order to do this more intensive inspection?

Mr. UNDERWOOD. You mean the national inspection program or our regular inspection program?

Mr. OBERSTAR. The regular inspections.

Mr. UNDERWOOD. Well, I guess emphasis always has to be put someplace. Our biggest area of concern is the flying public. Since approximately 1980 we've had such a reduction in staffing that we have had to change our mode of operation. For instance, during this period of time we have allowed written test examiners—operations that we normally conducted in the past—to allow us to have more time to do the emphasis on the people carriers.

Mr. OBERSTAR. It's that very lack of manpower that I'm concerned about. The Congress, on the initiative of the Members of this committee, on a bipartisan basis, advocated additional funding for staffing, and succeeded in getting appropriations for additional inspection staffing. This was a problem that surfaced in the course of our inquiry into Galaxy Airlines when we found that the FAA and the Miami FSDO had to turn a large number of its staff to the problems of this one two-horse carrier, and necessarily had to inspect paperwork, not engine work, and neglect hands-on inspections of other carriers under its supervision in order to make sure that this one marginal operator was at least attempting to fly right.

I see again your suggestion that there is a need for continued increases in manpower.

Mr. UNDERWOOD. I think there's a light at the end of the tunnel. We are starting to look a lot better in that we are getting new in-

spectors and we're getting some very quality-type people. It's looking better. We need more.

Mr. OBERSTAR. That will be the subject of another inquiry on the part of this committee.

I thank the gentleman for yielding.

Mr. CLINGER. I just have a couple more questions, Mr. Chairman.

I get the feeling that this has been an extraordinarily volatile industry since deregulation, that you've had some exponential growth in the number of carriers. Do you see that stabilizing? Or do we still have a lot of people coming and going in this industry?

Mr. KERN. I think in terms of the sheer numbers there has been a stabilization; in fact, probably a reduction in the total numbers of operators. But in terms of the volatility in pilot hiring and recruiting, in the training issues that result—and not just pilots, but mechanics, people who are qualified to work on the aircraft and the new technology that is in the new aircraft—I don't see a lessening of that kind of pressure on the industry. I think, again, the human end—the management, the pilots, the mechanics, the other people that have to keep it going—I don't see a lessening of that kind of pressure.

Mr. CLINGER. What I'm saying is, can you really determine from the FAA's point of view what kind of resources you're going to need? Can you project what you're going to need in order to monitor this industry down the road?

Mr. KERN. As the Chairman stated, we have a five-year plan that we would like to stick to. We think it's still accurate, as accurate as we can forecast at this time. It has called for staffing increases over the last three or four years.

It's very encouraging to me, as an example, to say that we have almost 700 more inspectors in Flight Standards today than we had back in 1984. We plan to add an additional 300 people to the work force next fiscal year. That tracks well with what we think the needs are going to be, but one of the features of our staffing standard that we've established is that it will change with the environment. We have the ability to take a look at the aviation environment, the numbers of operators, pilots, aircraft, repair stations, the services that we provide, and adjust the staffing.

Mr. CLINGER. Up or down?

Mr. KERN. Yes, sir, up or down. So when we finally get to that target year of about early 1991 it will be time to reexamine that environment to make sure that we do have a satisfactory number of people to give the additional check rides, to be in there, hands-on, with the engines and provide all the other kinds of things that are necessary.

Mr. CLINGER. I think we're going to have other rounds, are we not, Mr. Chairman?

Mr. OBERSTAR. Yes.

Mr. CLINGER. I think my time has expired.

Mr. OBERSTAR. The gentleman from New York?

Mr. MOLINARI. Thank you, Mr. Chairman. Reviewing the question of the need and the specific number of inspectors, when we look back to the leadership of Mr. Helms, he actually let go some 200 inspectors. At the time this subcommittee questioned that movement, and now—you had Project SAFE last year, which I

think is the five-year plan you're talking about, dictating the need for more inspectors.

Mr. KERN. That's right.

Mr. MOLINARI. Question: What took FAA so long to recognize the fact that you needed so many more inspectors?

Mr. KERN. You know, that's a good question, sir. Many of us have asked the same question. There's no doubt that we lagged five or six years behind the deregulated industry before we finally recognized that what inspectors like Mr. Underwood and Mr. Morantes were telling us that they were not capable of doing the job that they thought they should be doing in the field and, in fact, the job that we now recognize needs to be done.

I think it took prodding from this committee, as an example. It took prodding from our own people. The 200 people that were let go early in the 1980s were let go because of a thought that automation could somehow make up for inspectors. I know you've heard that before. We now admit that was not true. There is no substitute for an inspector in the field. We recognized back in about 1984 that we'd better begin our planning, that we'd better run as fast as we could to catch up, and that's what we're trying to do right now.

Mr. MOLINARI. Would you concede, then, that serious errors of judgment were made by FAA over the years?

Mr. KERN. I think so.

Mr. MOLINARI. When deregulation occurred, I think we all could have anticipated that there would be an explosion of new carriers and tremendous pressure on the inspection work force. I've talked to the Canadians who are in the midst of moving in that direction and that's the one point that I made, that they should profit from our experience and, for God's sake, make sure as they implement that deregulation that the one thing they do is make sure they have enough people on board to do the inspections.

Are you satisfied that we are now reaching the proper numbers?

Mr. KERN. I believe, sir, that we're going as fast as we can. The reason we chose to increase the staffing over a five-year period was simply the fact that we couldn't bring 1,200 people into the system in one year. We didn't have the capability to select, to train, and to send to our field offices over that short period of time. I believe that we do have the capability to do it over this four- or five-year period. We want to select the quality of people that Mr. Underwood said we are getting. We want to provide them with decent training so that when they get to the office they can do the job.

By the way, we've had three or four fairly significant discussions with the Canadians over the past two or three years. Your advice is very good. We've told them the same thing. We've given them copies of Project SAFE. We've given them virtually everything, experience-wise, that we've had to deal with over the past six or seven years.

Mr. MOLINARI. I'm pleased to hear that.

I guess if Project SAFE had been initiated back in the early 1980s a fair assumption would be that it would have dictated back then that more inspectors be hired and not lessening the inspection work force. Is that a fair statement?

Mr. KERN. I would assume so, but I can't really speak for the judgment or the planning of the people who were involved at that

time. The logic that we used based on the environment in the industry after we did an in-depth inspection and really had better knowledge, I think, better data to work from that our predecessors—when we had that "white glove" inspection there was no doubt in our minds that there were problems out there that needed to be resolved. That kind of inspection had never taken place before.

Mr. MOLINARI. And I compliment the people who were behind that. I think it opened all our eyes. The question is that that was mid-1984 and we are now at the end of 1988. We're talking about a four and a half year span. Time and time again I've wondered why it is, after such a sobering report, that a more aggressive program wasn't undertaken for a complete review of all facets of air safety.

I think that that should have dictated a more aggressive performance on the part of FAA.

Mr. KERN. I believe that when we look at the large air carriers, which were the ones that we focused on first in our priorities, I think we are in a period now of having accomplished not only the "white gloves" but a follow-up in-depth inspection on virtually every large 121 carrier in the country. We're satisfied that corrective actions either have been taken or are underway in that segment of the industry. And then the next step was into the commuter part of the industry, recognizing that we couldn't do everything at once. Unfortunately, the entry into the commuter inspection phase was preceded by the accident rate of the previous year. I believe we're now at the phase with the commuter industry that we were at about two years ago with the 121 industry. We pretty well understand the programs. We're working well with that segment of the industry. Again, the corrective actions are either in place or will be in place and we will be back with you to talk about the final results of that action sometime after December. I think we will be able to give you satisfactory responses in depth to all of the questions at that time.

Mr. MOLINARI. But I want to say that those who participated in that Project SAFE analysis did a public service that finally enlightened the entire industry, and FAA as well, as to the serious problems that existed out there, and began to address it. I was very much impressed.

Let me turn to another area quickly, if I may. In your statement you talk about the fact that one of the precipitating reasons for holding this hearing is that there were 33 accidents and 58 fatalities in 1987, virtually a doubling of what occurred the year before. We've had an ongoing dispute with FAA as to methods of determining the safety of the system. FAA and I disagree, for example, on the significance of near midair collisions, whether that is a trouble spot or a sign of trouble. At that time it was the position of FAA that you shouldn't look at near midair collisions; they are non-events, they didn't occur, and they're not significant. You should look at fatalities; that's the true measure of safety of the system.

Now, if we take that test, the test that the Administrators have pronounced as the true test, and say that the fatalities and the number of accidents doubled in one year over the year before, would you then say that the system is less safe than it was?

Mr. KERN. I don't think we said that exactly. What we have said is that there is a problem and there is an issue and there is a question, and I think that's exactly what the Administrator said. That's precisely why we began the in-depth inspection, to get the answer to that question. The question of the system or a particular segment of the industry being less safe or not as safe to our Flight Standards inspectors I don't think is that important. It may be important to the public, but we're interested in resolving all the technical issues. When we have a doubling of the number of fatalities or accidents, that's an indicator that becomes a problem.

Mr. MOLINARI. I have a difficulty with that because it may not be that important to the public, but I think it's very important to me since that's the indicia that they chose to pick as symptomatic of a safe or unsafe system.

Now, if you apply that same rule—they constantly change. That's been my problem, they constantly change what guideline we ought to follow in order to determine whether the system is becoming safer or less safe. So now, applying their own guideline, the only conclusion that I can come up with is that it is less safe, but you're unwilling to accept that——

Mr. KERN. No, no. I would have to say that that's a reasonable conclusion.

Mr. MOLINARI. Okay.

Mr. KERN. But I was only trying to indicate, sir, that we don't have a scale in the safety regulatory side of the FAA that would allow us to say that we only had 15 fatalities last year, so therefore there's not an issue or a problem that we need to resolve; and if it doubles to 30, this is what we really need to do. We don't have that scale. But I think an reasonable assumption when the accident rate doubles is that the system is less safe than it had been before. There is something there that the FAA Flight Standards Group needs to look into.

Mr. MOLINARI. I appreciate that.

I think the last time you or one of your colleagues testified before this subcommittee we got into the question of action/reaction and the fact that it sometimes takes tragedies, accidents, loss of life to cause FAA to look closer. We had honest admissions that that in fact was what happened with the Delta crash and aviation weather, the Cerritos crash—those were the precipitating actions that caused FAA to respond. Here again I think we have another situation.

In your testimony on page 3 you say, "Our analysis found management practices to be a problem area. Many commuters have experienced rapid growth from a two- or three-aircraft fleet to a large number of aircraft without concurrently acquiring managers experienced in large, complex operations." Isn't that the kind of thing that FAA should have been monitoring and been able to pick up early in time and then take appropriate action so that maybe we could have avoided some of the accidents that we're reviewing today?

Mr. KERN. I think if we had the numbers of inspectors and had been out there doing the kind of inspections that we now feel are necessary, we would have done that. As Mr. Underwood said, there were really some lean years in the early 1980s where, as we've said

before, our inspectors were really in the certification business rather than the inspection business. Many of the kinds of certifications that we did during those years also, we are now finding that there are some flaws in those. We are going back and correcting them because now we're taking a closer look than we ever did before.

The management kinds of findings that we've had during the course of this inspection, though, I can assure you have been corrected.

Mr. MOLINARI. I'm pleased to hear that.

One further question. I think my time is about up.

With the major carriers buying up commuter airlines, can you give us any idea as to whether they are injecting new management practices or whether they're simply taking over these commuters and letting them do business as normal?

Mr. KERN. Most of the large carriers I've talked to—and I'm talking maybe six or seven of them right now, the largest—who have co-chairing agreements and have commuters with the paint scheme and pilots that wear the same uniform have in fact lent their expertise in the areas of operation and maintenance and management of the carrier to the smaller commuter. I am encouraged, as a matter of fact. I think this is a step in the right direction. I think the more that the FAA can do to facilitate this exchange of knowledge and experience and seasoning, lessons learned, to the commuters, the better the safety record and the training for the pilots and the mechanics is going to get.

Mr. MOLINARI. Thank you. As usual, I appreciate your candor, Mr. Kern.

I think my time is up for now, Mr. Chairman. Thank you.

Mr. OBERSTAR. We will return to another round of questioning.

Mr. Kern, let me also compliment you on your candor in responding to questions about this matter of margins of safety and attitudes toward safety, the line of questioning which Mr. Molinari just pursued. That is very refreshing to hear in this committee and you have brought that candor here before. We are glad to see this responsiveness.

It is important to point out that FAA has evolved in the last eight years under three different Administrators. It was very refreshing earlier this year, I might say to my colleague, to have Mr. McArtor come before this committee and say that safety should be measured by exposure to risk as compared to statements of earlier Administrators on the matter of near midair collisions, maintaining that those are non-events and that we need not be concerned about them as measurements or yardsticks of safety. This whole new attitude I find very encouraging, very refreshing. It has given a new burst of energy to the agency, and that really makes me feel good.

I see the gentleman from Ohio is here. Would the gentleman like to pose some questions?

Mr. MCEWEN. No questions at this time, Mr. Chairman.

Mr. OBERSTAR. What is the break point at which a commuter airline might need a higher degree or higher level of inspection? We've had some discussion, I'm sure you're aware, of a finding in the course of your inspectors' work that something happens at

roughly 45,000 hours a year, that at that point operations have reached perhaps some sort of critical mass at which the airline needs to expand its management, its work force, the FAA needs to step up its surveillance. Is that 45,000 hours a real benchmark or is it just a pointer that at this stage there is a critical point at which major changes should start taking place within that airline, and they have to respond and the FAA has to respond?

Mr. KERN. Mr. Chairman, that's a question that the FAA has been wrestling with, as you probably know, for a long time. We've had many efforts over the years to try to uncover those safety indicators that we think are real and relevant to the health of the carrier and, in fact, to the health of the national airspace system. We've run into a lot of blind alleys but we're continuing to work on it. In fact, right at this time we have a project—our Associate Administrator for Aviation Safety, Keith Potts, has a project right now to identify safety indicators.

[The following was received from Mr. Kern:]

SAFETY INDICATORS

As I indicated during the hearing, we have a safety indices project underway in the Office of the Associate Administrator for Safety. The goal of the program is to develop a set of measures for defining the current safety status of the nation's air transportation system and for identifying areas of increasing risk.

On August 15, the FAA awarded a contract to Fu Associates and the Flight Safety Foundation to develop a prototype system of safety indicators. This contract is for the first phase of a projected 5-year program to develop a computerized safety measurement system. Indicators of air traffic control system safety and flight operations safety will be developed with prototype implementation scheduled for October 1989 and June 1990, respectively.

The contractors are now concentrating on the concept definition, selection of potential measures, means of evaluating their validity and usefulness as safety indicators, and the costs of collecting and maintaining data systems for them. The development of useful, valid indicators is quite difficult due to the relative infrequency of accidents and the inadequacy of many data sources that rely on voluntary reporting and/or judgmental estimates of conditions.

Mr. KERN. As it relates to the commuter study, when we had our team of experts together here in Washington for several weeks, that was one of the key questions we asked them. Our inspectors, the contractors and DOD folks broke up into teams to develop this inventory of relevant safety indicators. Some of the things that we talked about were the complexity of the operations, the enforcement history, the accident history of a carrier, the financial condition of a carrier, and some of the other things.

One of the indicators that this group came up with was a dividing line—it was an arbitrary line, but it made sense at the time—that related to the complexity of the operation, and that indicator was a carrier that flew more than or less than 45,000 total hours a year. When you think about it, if you fly 1,200 to 1,600 hours per aircraft—and I'm not sure if that's exactly right—that means you have an operation with 25 to 30 aircraft. That means that you will have to have a relatively sophisticated and complex maintenance program. You will have several hundred pilots working for you, and knowing the turnover, that means you're going to have to have a very sophisticated training program for your company. Your management is going to have to be able to keep track of all the data. You will have an extensive route system.

So for the purposes of this particular inspection—and as I said, as an arbitrary but meaningful way of separating the "moms and pops" from the ones who have grown, or the larger kind of commuters, we picked 45,000 hours.

I think it will be very interesting when we get into the analysis phase, Phase Three, that we're entering at the end of this month, to see if that really is an indicator that we would want to continue to use in the FAA. As we've said before, one of the things we've added here in headquarters is an evaluation staff, a safety staff that works directly for the Director of Flight Standards. This group—and particularly now that we are "straight-lined" in Flight Standards—has almost day to day directional authority over many of our inspector resources. If this proves to be the kind of an indicator that is relevant, that will be included in our future plans and programs for even focusing the scarce resources on problem carriers.

Mr. OBERSTAR. But at this point you're not prepared to cite a specific number? You will find though, as I understand your testimony, some yardstick or benchmark in your report on the conclusion of this inspection—or some dividing line—where the carrier passes to a higher level of responsibility on the part of management, a higher degree of commitment to resources, training, pilots, equipment, a higher degree of maintenance, and therefor perhaps a higher degree of surveillance on the part of FAA?

Mr. KERN. Yes, sir. And as you said, 45,000 might be an appropriate level. It may be some other level. After we've taken a look at the data, when we come back the next time we will be happy to let you know what our findings are. It makes it much easier for us if we have four or five or six indicators to know when the flag goes up, when we should send a team in to take a look at a carrier.

Mr. OBERSTAR. I think that would be helpful to the carriers, as well.

Mr. KERN. Yes, sir.

Mr. OBERSTAR. We do have a vote in progress and we will take a recess for this vote.

[Recess.]

Mr. OBERSTAR. The subcommittee will resume its sitting.

We had a very brief discussion about Project SAFE. Is Project SAFE being felt in the field with positive results? The FAA has been instituting changes to the safety inspection program and we've been getting reports on the problems incurred in the implementation of Project SAFE. I'd like to ask our two inspectors to comment on their judgment of the results of Project SAFE and how it is working in the field.

Mr. Underwood and Mr. Morantes?

Mr. UNDERWOOD. I guess from the time that Mr. Kern first said the words Project SAFE, or I heard it mentioned more than three years ago, I was very encouraged by what was happening, and I still am. It is not something that is happening overnight but I am just very encouraged by what I've seen so far.

Mr. OBERSTAR. How many certificates does your office oversee?

Mr. UNDERWOOD. Part 135 certificates, if I recall correctly, are 37.

Mr. OBERSTAR. That's a considerable number.

Mr. Morantes?

Mr. MORANTES. As far as the number of certificates, I don't know, but it's over 30.

Mr. OBERSTAR. And what is your view of the effect of Project SAFE?

Mr. MORANTES. Well, it has given us more opportunity to put more emphasis on surveillance and working with the operators. We have increased our emphasis on air taxi operators, as well.

Mr. OBERSTAR. Thank you.

Mr. Beaudette, in June you were quoted and made a number of public statements about the findings up to that point of the inquiry into regional carriers with respect to high employee turnover and paperwork. You were suggesting that the high employee turnover rate can "cause situations to arise that outside eyes can detect," and that the way to bring about suspension is a finding of fraudulent recordkeeping. Does that suggest that you found any fraud concerning recordkeeping?

Secondly, address the matter of high employee turnover.

Mr. BEAUDETTE. Yes. Let me do that in two phases and go back to where we were in June when we said this, to put that a little bit in context, if I may, and then address the more real issue of turnover and how that turns up both in the carrier and in the case of our own inspectors.

Back when our inspections first got underway, as is not unusual, they are not often clearly articulated to the industry. They don't know, perhaps as much as you and your committee know or us, in terms of why we're doing this. In many cases there were a number of operators out there who don't read the Post and don't do much other than do business. The next thing they know there is a massive inspection program and they are the one that is selected.

So I tend to be sympathetic on one hand for the commuters, the smaller operators especially, who are doing their business and find the FAA there looking at them with what they would consider to be a massive inspection team. I think that could be traumatic. When we talked to them we were talking as a panel, and in fact the FAA was being portrayed that way, very generally, as showing up with Army boots, walking through a very unsuspecting commuter, not saying much to them, and then a week or two later saying, "You've got problems and we're taking your certificate." I was trying to say that was not the way the FAA did business, nor was that the specific way that we conducted these inspections. We have a very thorough entry exit brief.

I guess the other point was that we were giving little notice on these inspections, and that's somewhat of a change for us. We usually publish these inspections by quarters; carriers know at least a couple of months in advance when we're coming. There are some logistic pluses for doing that, but it has been pointed out to us—and we see the merit—that there are some advantages to showing up with less notice, too, in terms of getting a more accurate look at what goes on. So I was trying to explain that we were not giving a lot of notice on these particular inspections. We were not publishing schedules. We were showing up, but we were conducting very thorough entry briefings. We were sitting down with the carriers, explaining to them why we were there, what we were going to be

looking for. We were spending time with the District Office getting to know about the carrier, so even though these are outside eyes, they are introduced to the ways that these commuters do business.

We instruct our teams very clearly when they find problems, not to run off with them and gather evidence so that we can come back two weeks later and shut down a carrier. Rather, on a daily basis we should make our findings known not only to the key personnel of the carrier but to the principal inspectors of the certificate-holding District Office. There should be no surprises when we revoke a certificate. The carrier ought to know. We ought to be talking to them daily.

I merely stated that the one item that we took seriously enough to do that kind of action was if we found that fraud was being used to try to throw us off the trail. If people were in fact creating records to either alter what they did or to have records that they hadn't had before, that the FAA would react very swiftly and very seriously.

Mr. OBERSTAR. But that statement was not based on any finding of paperwork fraud?

Mr. BEAUDETTE. It was not at that time on those inspections, no. Proving fraud is very difficult. We did find early on in some of the inspections that the records were either not accurate or not complete or not as the operator said they were being kept. That does not always necessarily mean fraud, but recordkeeping ties very directly to the question that you posed, sir. When there is expansion, when complexity changes, when the system tends to outgrow the management structure that is in place, some of the things that do get overlooked are the routine daily paperwork details that kind of stack up.

In many of these cases the FAA does not ask carriers to keep records just so that we can come and inspect, although they are very good tools for that. They are also management tools for the management officials. How else do you know that your pilots are trained or your ADs are complied with? Those records work just as well for company management as they do for us.

So paperwork and recordkeeping issues are issues that we're finding and they are tied directly to changes in growth, changes in environment.

So I hope I've answered your question on both parts, one, what we saw originally, why I made the remarks I did, and two, I think we'll find that is an area that we identify in our final document and one that we pursue more vigorously in the future.

Mr. OBERSTAR. Thank you.

Let me return to the first part of the question, which was the high employee turnover rate. Let me ask the inspectors what problems that creates in their experience in inspecting the commuter operators. If there is a significantly high turnover rate among management personnel and operations personnel that creates some additional problems for you, both in terms of adequacy of paperwork submitted and in the actual substantive work completed on operations, maintenance, and so forth?

Mr. UNDERWOOD. Mr. Chairman, most of the commuters that exist today have grown, as Mr. Kern mentioned, from the "mom and pop" operation where the recordkeeping that was necessary to

keep that size of company under control could be done on a blackboard. As the companies grew, and they grew quite rapidly, there became a need for a much more complex recordkeeping system simply because of the size of the operation. These people weren't used to dealing with this type of a system. They were developing systems to try to meet the demand but weren't used to them. The turnover in the management area—if you have, for instance, a Director of Operations or a Director of Maintenance who has grown up with a recordkeeping system and then that person leaves for one reason or another and you bring some new person in there, they are generally brought in from the same experience background that the first person had and they have to learn a system all over again. In order to make a system work, no matter how good it is, it takes experience with it.

So the high turnover of management is just a growing pain of learning how to use these records. Until they learn how to use them they sometimes don't use them correctly or accurately.

Mr. OBERSTAR. Might that situation, Mr. Kern, require a change in regulations on the part of FAA? Or just directives to and consulting with those operators to comply with existing regulations, train their personnel better, and do a better job of recordkeeping? We know how important that recordkeeping is.

Mr. KERN. I don't think it demands a regulatory change. Maybe the word "clarification" might be better suited. We have worked with the industry and are continuing to work on guidance-kinds of materials and documents that would more clearly explain the FAA's needs.

One of the things that I think we should mention is that there is no one system or way for a carrier to keep records. Virtually everybody has their own way of doing it. We are interested in the bottom line, so when there is a change in people and dynamic movement in the industry it takes people to get used to that system of recordkeeping. But the final product is something on which we need to work better with the industry to make sure they understand what records we need when we come in for an inspection.

Mr. OBERSTAR. Now, the problem areas that Mr. Beaudette cited were those in maintenance, weight and balance, flight and duty time, and compliance with the ADs, the Airworthiness Directives.

Mr. Morantes, what has been your experience with carriers and recordkeeping in those areas that I just cited?

Mr. MORANTES. As far as recordkeeping or do you want me to address the high turnover in mechanics?

Mr. OBERSTAR. Yes, please do.

Mr. MORANTES. Okay. The effect of high turnover on the mechanic workforce is that the operator trains mechanics to become familiar on the aircraft. Several of these aircraft have required inspection items that have to be signed off by qualified personnel and these people need to be trained in these areas. What happens with this high turnover rate is that people are trained, stay there maybe a year or two years, then transfer on to the airlines and get a better and higher-paying job. Consequently, the operator is left with having to retrain people and go through the training process again. We go out and inspect and we are constantly seeing that

there are new people who are now in charge of doing inspections, and none of these people received the required training. With regard to recordkeeping, we found that, in fact, these people received some of the required training but it was not properly documented for whatever reason. We pointed this out to them and they verified that these people had in fact received the training, and the operator corrected that immediately.

As far as Airworthiness Directives are covered, this particular operator that I looked at was complying with his ADs. He had a good recordkeeping system. We didn't have any problem with that as far as the ADs are concerned. Now, as far as some of the maintenance that was performed, we found that some of the items were not properly documented, but when we pointed it out to him and we researched the item we found out that in fact it was documented but was not in accordance with the regulation, but they showed us that they in fact had performed the work.

Mr. OBERSTAR. And when you do that, when you point out to the operator these shortcomings, these failings of proper recordkeeping and showing that maintenance has been done at the time it is supposed to have been done in the way that it should be, and weight and balance and flight and duty time and so on, what is their response? What have you found generally?

Mr. MORANTES. We have found the operators to be very cooperative. They appreciate us pointing this out to them and they take immediate corrective action.

Mr. OBERSTAR. Are there any, Mr. Morantes, Mr. Underwood, who have been resistant? Who have said to you in effect, "Look, I'm trying to run an airline. Stay out of my hair with all these nitpicking things"? A line that I have heard, by the way.

Mr. UNDERWOOD. In my case I have to relate to both the national inspection program and also that our office deals directly with some commuters.

On the national inspection process we have had total cooperation, very good response to everything that we have brought up. Because we deal so much more with a single operator when we're dealing with those that our office holds a certificate on, there have been times when they maybe were a little frustrated with the attention they were getting.

But again, it has been good cooperation on the national inspection level.

Mr. OBERSTAR. That's encouraging to hear. I'm really pleased to hear your response that overall there is a good attitude on the part of the carriers. Clearly, from Mr. Kern's testimony and from other documentation that we've received in preparation for this hearing, there were some carriers in the course of this inspection who just said, "We're going to fold our tent and go away." They just turned in their certificates. And those who have been a problem have apparently decided to walk away from it.

Weight and balance procedures are critical to safe flight. We've seen several accidents, notably Arrow Air and the Ryan Air accident, in which weight and balance have been pointed to as contributing causes. What monitoring takes place and in what way do you monitor weight and balance procedures on commuters?

Mr. UNDERWOOD. Some operators, through operations specifications, have what we call an average weight program which, in order to have this program approved, they have to do a fairly extensive survey to determine that these average weights are in fact valid.

The problem with commuters is that they have smaller aircraft that carry smaller numbers of baggage, and the reliability is not necessarily as good as it would be using larger type aircraft.

Mr. OBERSTAR. Do you notice any reluctance on the part of carriers to move passengers around inside the aircraft to maintain a better balance?

Mr. UNDERWOOD. I have not personally experienced that. In the enroute inspections and the national inspections that I've done they have been pretty good about that.

Mr. OBERSTAR. Mr. Morantes?

Mr. MORANTES. No, I haven't found any objections to moving passengers around by the operator.

On the maintenance side we make sure that the operator weighs the aircraft. If it is a multi-engine aircraft it is weighed once every 36 months. That is mentioned in the operations specifications.

Mr. OBERSTAR. I have seen numerous occasions—I happen to travel on commuters a great deal—on which the pilot or copilot would get back there and say, "Now, we've got to move you folks around a little bit because we don't have as many passengers as we anticipated, or more than we anticipated, and we don't have you configured just right." People are very compliant. They move around without any reluctance, but I just wanted to make sure that this is an area that you're inquiring into adequately.

The Chair will withhold further questions at this point and recognize the gentlewoman from Maryland.

Mrs. BENTLEY. Thank you, Mr. Chairman.

Gentlemen, the high number of accidents at the beginning of this year apparently prompted the Administrator to initiate the special inspection. What was it about these accidents, other than the frequency or the large number, that caused the FAA to divert such a considerable portion of its manpower away from routine tasks? And did the FAA detect a common feature in these mishaps, indicating a fundamental weakness in the industry?

Mr. KERN. Madam, that's a good question. I think the answer is partially in the question. I believe that what stimulated the Administrator to initiate the inspection was the question, what is wrong at this point in time? There is a problem and issue that the FAA needs to go out and help resolve, and I think it was as simple as that.

However, there was an underlying reason for it. As I mentioned earlier we had over the past three or four years in the FAA begun a number of in-depth, very significant, unusual inspections with the larger air carriers in the industry. If you look at it simply from a timing standpoint—but I don't want you to think this was our primary motive—it was time for the FAA to begin in-depth inspections of the commuter industry, also.

So I think the primary stimulus was in fact the accident record, along with the public recognition of this committee and others that

it was time for the FAA to take an in-depth look at that part of the industry.

What we did find so far, and our final report won't be out until December, is that the problems that we saw in this very dynamic and growing segment of the aviation industry, the problems that we found in management, operations, and maintenance were very similar to the problems that we had found several years earlier in the growth that resulted in the larger air carriers after they were deregulated.

Mrs. BENTLEY. There is growing concern, especially among major carriers, that the pool of pilot candidates is dwindling. Some carriers are contemplating training programs that begin with candidates having virtually no flying experience at all. I am curious as to how the commuter industry is meeting this challenge, especially considering the sophisticated equipment that many of them are now bringing on line.

Mr. KERN. Well, the situation of pilot supply is also a concern of the FAA. I believe that the industry, both the large air carriers and the commuters, have clearly recognized that at this point in time. The programs that we are seeing emerging in the ab initio or "from the beginning" pilot training programs—some others have called it de novo training—in any case, the identification of candidates, perhaps in high school or shortly thereafter, who can then go on to a four-year college or a two-year college and ultimately grow into the right seat of a commuter. This is an activity in the United States right now that is just beginning. The Europeans, and especially the British, have been using this process for a number of years. I think they recognized the shortage years ago; we're getting to the point where we're recognizing it now. I personally believe that it is the issue of the day in aviation, along with the other kinds of human factors problems. But the pilot supply and the mechanic supply is there.

Some of the innovative approaches—and I think this is very exciting—the work that's being done right now at the University of North Dakota, as an example, in conjunction with Northwest Airlines. Fresh new thinking on pilot training. The University of St. Louis——

Mrs. BENTLEY. What is it?

Mr. KERN. Well, there seems to be emerging in the academic community in the United States, the four-year colleges and universities and some of the two-year—I don't want to say that they're not doing a job either—but what seems to be emerging as the burden of pilot training shifts from the military to the civilian sector, there are some colleges and universities like the University of North Dakota, Parks Air College in St. Louis, Emery-Riddle and others, a curriculum that recognizes that piloting is now a profession that should be taught in a four-year curriculum, a profession that people out of high school can aspire to, a chosen kind of profession that people will want to get into and receive a rigorous two- or four-year academically satisfactory preparation before they get into the right seat of the commuters or into the flight engineer's position or the right seat of another carrier.

Many of the major air carriers are participating with the colleges and the universities. There is a group called the University Avia-

tion Association that represents about 80 colleges and universities in the United States that is right on the leading edge of this new and, I think, very exciting technology. It is creating training centers at the schools that look very much like the training departments of the major air carriers. They are scaled down essentially for the commuter or the entry level, but they will have the same sophisticated computer training devices; they will have the same kind of sophisticated simulators for the smaller aircraft, and other kinds of training technology and training aids that are right on the leading edge of what's happening in the whole academic community these days. It's really encouraging to watch. But it clearly represents to me that the industry has recognized that there is a need, there is a problem, and it's very costly. They are spending the money to meet that challenge.

Mrs. BENTLEY. At the University of North Dakota, for instance, Northwest is bearing most of the cost there?

Mr. KERN. I think it's more of a joint venture among the university, Northwest Airlines, and the Federal Government. There was a sizable amount of money that went to the university under the Airway Science Program over the past few years to develop facilities in various disciplines in the aviation industry.

Mrs. BENTLEY. You started to name some of the other universities and what they were doing. Do you want to continue that?

Mr. KERN. Let me admit that my list is incomplete——

Mrs. BENTLEY. That's all right. You can send up an addendum to it.

Mr. KERN. I will get that for you.

There are exciting things going on at Emery-Riddle these days in Florida; University of St. Louis; and Parks Air College in St. Louis. They seem to be affiliating with the commuters and the other air carriers to provide this necessary, and in some cases missing, rigorous training that is necessary to get people into the right seats of the air carriers.

Mrs. BENTLEY. I think that is very interesting and important, Mr. Chairman.

I would appreciate having all the data you could submit to the committee.

Thank you very much, Mr. Chairman.

Mr. OBERSTAR. We will receive that information and include it at this point in the record, and we will see that Mrs. Bentley receives copies of it.

[The following was received from Mr. Kern:]

AFFILIATIONS OF MAJOR AIR CARRIERS AND UNIVERSITIES

University of North Dakota, Grand Forks, North Dakota/Northwest Airlines.
Dade Community College, Miami, Florida/Eastern Airlines.
Aims Community College, Greeley, Colorado/Eastern Airlines.
San Jacinto College, Pasadena, Texas/Eastern Airlines.
Parks College, St. Louis, Missouri/Eastern Airlines.
Southern Illinois University, Carbondale, Illinois/United Airlines.

Mrs. BENTLEY. Mr. Chairman, I, have a brief prepared statement that I offer for the record.

Mr. OBERSTAR. Without objection, your prepared statement will appear in the record at this point.

[Mrs. Bentley's prepared statement follows:]

OPENING STATEMENT OF
THE HONORABLE HELEN DELICH BENTLEY
BEFORE THE
SUBCOMMITTEE ON INVESTIGATIONS AND OVERSIGHT
HOUSE PUBLIC WORKS AND TRANSPORTATION COMMITTEE
SEPTEMBER 28, 1988

Thank you, Mister Chairman. I want to commend you and Mister Clinger for convening this hearing today to hear the testimony of the Federal Aviation Administration regarding their in-depth inspection of the commuter airline industry.

I also want to commend the FAA for initiating this inspection study in response to the series of accidents involving commuter airline operators last year. I believe this to be a responsible move on their part to closely examine this area of the industry, which is becoming increasingly popular with the traveling public.

Prior to today's hearing, I was pleased to learn from Maryland aviation officials that they have had no safety problems with the 21 commuter operators serving Baltimore-Washington International Airport.

These operators provide services to more than 800,000 commuters or 10 percent of the total number of air travelers at BWI during 1987.

I hope the apparent high-level of safety among commuter operators experienced at BWI is not unique, but is indicative of the commuter airline industry throughout the United States. But, I will leave it to the experts to give us the benefit of their investigation before making a judgement.

Mister Chairman, safety in the air is of paramount concern to me, as it is to all members of this subcommittee; and should the FAA outline problems prevalent within the industry, I assure you that I will work closely with you and my colleagues to develop remedies to restore safety to the highest level achievable.

Thank you, Mister Chairman.

Mr. OBERSTAR. The gentleman from Pennsylvania?

Mr. CLINGER. Thank you, Mr. Chairman. I just have a couple of questions, one of which our colleague, Mrs. Johnson, would like to ask. She was here earlier but had to leave for another meeting.

In the study that you have conducted thus far have you discerned any difference in the quality of compliance with all of the various items that you're looking at between commuter airlines, commuter companies that are affiliated with major airlines such as American Eagle, Allegheny Commuter, etc., and those that would be independent, that is, those that would have no affiliation with the major airlines? Is there any qualitative or quantitative difference in compliance?

Mr. KERN. Let me begin the answer, sir, by saying that I have not, but admitting that we have not completed our in-depth analyses.

Let me ask Mr. Beaudette if he's noticed anything that would indicate that kind of a difference.

Mr. BEAUDETTE. Not at this time, no.

Mr. CLINGER. Okay. So that would have no bearing, then, on whether you see good performance or bad performance, whether or not they had a connection with one of the major airlines?

Mr. BEAUDETTE. The information that I've looked at so far, sir, is not detailed enough to know one way or the other, to make the statement that there is no difference or that there is. We'll just have to look for that.

Mr. CLINGER. Okay.

We talked a lot about the kinds of inspections that you are conducting with regard to these airlines, addressing the remedial actions that can be taken with these airlines. I'm wondering if there is any kind of preventive action we should take. For example, do you have an opportunity to look at financial records of these airlines to determine, for example, if they are skimping on resources devoted to maintenance or safety issues? Or is your inspection sort of limited to looking at the aircraft and so forth?

Mr. KERN. We have used financial records in the past as an indicator, but I believe we have a technique that is much more basic than that and which satisfies our purposes.

Our inspectors and the community at large that work with the carriers on a day-to-day basis have a pretty good understanding of the financial health of that carrier in watching the way they conduct their business. For years our handbooks have reflected guidance to the inspectors to keep an eye out for these things—like if they're paying cash for gasoline, if they're unable to meet their bills, if people park the truck in front of the airplane until they pay the bill, if parts are not available at the stations, as an example. They are indicators that the financial health of the company might be in question.

So I think we have a pretty good feel for the financial health without actually going and trying to get the more sophisticated kind of financial records. But we would have access to that———

Mr. CLINGER. That's what I was going to ask you. Would you, if you had to go in and get the access to those records under existing——

Mr. KERN. Yes, sir. In fact, over the past few years we have begun a very close liaison with the Department of Transportation offices, which, in fact have responsibility for the fitness, including the financial fitness, of the air carrier industry. In fact we exchange data with them on a daily basis.

Mr. CLINGER. Okay.

Thank you, Mr. Chairman.

Mr. OBERSTAR. Well, let me pick up on that point, on the economic implications of commuter service. Again, our experience with Galaxy Airlines, which revealed some other marginal operators at the same time, showed that there clearly was a connection between the economics of airline operation and safety, a point which FAA has now come to accept and to consider as a part of its ongoing review of air carrier operations.

Do the commuters file the same kind of financial information, Form 41 data, as the majors do?

Mr. KERN. Mr. Chairman, I'm not personally aware of that. I would be happy to supply that information for the record. I suppose they do, but I would feel better if you would let me supply that for the record.

Mr. OBERSTAR. Please do, and then respond whether, having found that out, it would be useful to your operations and oversight of commuter operations to have that data in hand.

Mr. KERN. Okay.

[The following was received from Mr. Kern:]

Commuter operators are not required to file a Form 41 as required of Part 121 certificate holders. Commuter operators file a Form 298c, which does not currently require the reporting of financial data.

However, the Department of Transportation, on April 29, 1988 published a Notice of Proposed Rulemaking to amend Part 298 to require commuter air carriers to file a Schedule F-1 "Report of Financial Data". This schedule would supplement the Form 298c and is needed to obtain quarterly financial data (Total Operating Revenues, Total Operating Expenses, Net Profit or (Loss) and Passenger Revenues—Scheduled Service) from commuter air carriers providing scheduled passenger service. The information will be used by the Department to monitor the continuing fitness of commuter air carriers and by the FAA in allocation planning for our inspection resources.

The comment period closed on June 20, 1988 and the final rule is currently undergoing Departmental review.

Mr. OBERSTAR. I recall very distinctly in the whole series of Galaxy operations a theme that kept coming back was, "We knew something was wrong with this carrier when the pilot was paying the crew in cash," when they were just one hop ahead of the bill collector, when one service station was calling ahead and saying, "I'm just warning you, don't fuel up Galaxy. They didn't pay their bill here." The operator responded with, "Thanks for the information, but they just left. If we had known, we wouldn't have gassed them up."

That's an extreme case and it indicated that there were more serious problems with that carrier.

Can a commuter's association with a major carrier provide greater financial operating margins?

Mr. KERN. Mr. Chairman, I know that in the past several years there have been some acquisitions of commuters by major air carriers, and I suppose in those cases the resources available to the larger carrier would be available. I also understand that even

before the actual acquisition there has been partial acquisition of some of the commuters which did involve an infusion of cash and other resources to the carrier. In the third case there certainly are relationships that I'm aware of with commuters where the large air carrier has teams of experts who do go in to their commuters and give them advice in terms of enhancing their maintenance and operation programs and better managing their organization.

Mr. OBERSTAR. Well, that would be a very useful factor, it seems to me, to document further and develop more information on.

What responsibility does a major carrier have for a commuter with which it has code-sharing arrangements?

Mr. KERN. From a safety regulatory standpoint, or the functions that the FAA is concerned with, virtually none. I've talked to a lot of the executive officers of the larger carriers and to a person they feel they have a corporate or a moral commitment simply because that aircraft has their logo and their paint scheme on it.

Mr. OBERSTAR. Many people think that they are really flying major carrier "X" when they get on this commuter that has the same logo, the same paint scheme, the same napkins, the same plastic cups. They think that they're really flying with this major carrier. If something goes wrong, they find they aren't.

What implications are there for safety operations in those arrangements? Is there a tendency to shirk responsibility on the part of the commuter?

Mr. KERN. The smaller carrier, while it is not linked in a safety regulatory sense to the larger air carrier, still has to comply with the regulations of Part 135. In most of the cases that I've talked about I think that partnership agreement or contractual arrangement, whatever it is, has enhanced the capabilities of the smaller carriers simply because of this moral kind of understanding by the larger partner that "I want to help and I want to take care; I certainly don't want to have my paint scheme and my logo involved in an accident or incident" or anything that might tend to reflect unfavorably upon the larger partner. From the beginning—five, six, eight, ten years ago, the earliest kinds of arrangements like this—I have seen that the larger partner participates in helping the management in many, many different ways.

So for us, my opinion is that that's a beneficial arrangement.

Mr. OBERSTAR. On balance, the code-sharing arrangements are beneficial, you say?

Mr. KERN. From a safety regulatory standpoint. As I said earlier, though, I believe the carriers that actually buy the commuter and it then becomes part of American Airlines or a part of whatever airline, benefit much more because I know those carriers tend to become much more interested in, one, the human that is in the system, and two, the maintenance on the aircraft. They then are in fact liable for the activities of that company; not just morally liable but financially liable.

Mr. OBERSTAR. That's very helpful.

You said that in the next month you're going to be implementing a task force recommendation by establishing an organizational unit responsible for air carrier flight crew member training. What will that be designated? How is this going to be established? As you said, it will be within the Flight Standards division operations, but

how will it be staffed? Will you be drawing from other staffing within the FAA to create this operation and replacing those people so that other operations will not ultimately be shorthanded?

Mr. KERN. Let me begin and then hand off the question to Mr. Beaudette, who is now the Deputy Director of Flight Standards but most recently was the Division Manager of the Air Transportation Division where that unit will be established.

We have sensed the need, for at least three years, to have a more centralized, more sophisticated capability in FAA to help our inspectors make judgments concerning the quality of training programs employed by the air carriers. When you take a look at the sophistication of the machinery, the complexity of the training requirements, I think it's unfair to expect a Principal Operations Inspector, who is one person—let's take an example, one person in Denver who might be the Principal Operations Inspector for United Airlines—to have to face that carrier and make decisions about either initial approval or changes in that program. Here's a company with large resources that can hire the best educators and curriculum developers in the world and then bring a package over to an FAA inspector and say, "I'd like to take five hours of classroom training out of my program and convert it to a videotape that I'd like people to watch at home." I think it's unfair to expect an inspector, who is basically a pilot like we are, or a mechanic, to make that kind of a fairly sophisticated judgment.

What we have been talking about and what we are now going to initiate, and it will work particularly well now that we are straightlined and have more direct line authority over the operations of the field, is a unit that is composed of both pilots, educators, people who are trained in making those kinds of decisions, people who know simulators and simulation and exactly what it can do for people, people who understand cockpit resource management and the other kinds of intricacies that we now find out in the system.

So that's basically the kind of unit we would like to develop. We want to make it a powerful unit because, as I said earlier, the training of the people in the system is one of the key issues of the day, if not the key issue.

So that's the framework for it. Now let me hand it off to Mr. Beaudette to talk more about the details of it.

Mr. OBERSTAR. I like that approach. I like that concept of straightlining. It is one that this committee has urged the FAA to do with respect to another one of its operations, that of aircraft certification, take it out of the region and bring it in to Washington to have that other level of review.

Mr. BEAUDETTE. Mr. Kern listens very well when we brief him. He has gotten into quite a few of the things that I would have considered to be details in describing the makeup of this organization and where it is going to reside and what its primary purpose is going to be, and I will just basically repeat that.

It is an organizational change, and in addition to the inspections that we're doing on the commuters we are asking ourselves in a number of areas not only if our rules are adequate, but if our methods of doing business with the carrier are the best way in today's environment. Is the principal inspector getting the kind of

support he or she needs? Is the office structure correct? Is the relationship between the field and headquarters correct?

I think that a number of things are being reconsidered, and I believe it's positive, as you mentioned, that we are straightlining. We have a more direct relationship between the central organization and the field. We are targeting training first. The second group that you will see formed will work more on routine analysis of surveillance and inspection. We are concentrating on forming groups of people who are dedicated to provide service, expertise, and communication with principal inspectors. Just as John said, we've had fixed numbers of training hours in the past. They've been reduced. We are going to try taking a more sophisticated approach at defining training objectives, working with the carriers to see that their systems and procedures are in place to meet those training objectives, and that starts to leave some of the basic expertise that we have as pilots. We do need human factors expertise. We do need simulator expertise. Those kinds of people will be blended into an office that will have direct access to the principals and vice versa. When a principal inspector is given a change or a proposal from a carrier they will have a place to come to get the kind of help that they're not getting right now to the degree that they need it.

So that group is targeted to be in place officially by the first of October. We've already got people working in it. We need to continue to staff it, and I assure you that it won't detract from the other things that have that kind of high priority. But we are restructuring our priorities. I would say, just in terms of continuing the kind of process that we've used in this inspection—and that's not just randomly sampling carriers and giving them an across-the-board inspection; I think that hopefully that's the significance of the learning process that we're going through with this particular 135 inspection—that on a more systemic basis we are going to gather our surveillance data, gather economic data, gather accident and incident trends, and do an ongoing analysis at a centralized place and target focused inspections on focused carriers. So that will be another benefit of straightlining, our ability to work more directly with principals so that we're not asking one principal inspector to analyze stacks of paper on 15 operators and do some sort of trend analysis. We'll work with people to do that. The training organization will be the first one we'll start.

Mr. OBERSTAR. That's good to hear. I feel very encouraged. I like that idea and that approach.

Again let me emphasize that there is such a great willingness on the part of Members of Congress to provide the funding for the staffing increases that are necessary for FAA to conduct this work in these areas.

I'll have a last series of questions about pilot turnover training and a question about the overwing exit issue that we visited earlier this year, but right now I want to recognize the gentleman from New York, Mr. Molinari.

Mr. MOLINARI. Thank you, Mr. Chairman. I do have a few more questions and then I must leave.

Earlier during my questioning we got into the question of the "white glove" inspection in 1984. We know what the results of that were. I think the fines were very appropriate. They were very

large. What's puzzling to me is when the commuter airlines saw sizable fines that threatened the very existence of some of the carriers, why they didn't react to ensure that they wouldn't be put in the same pot. Is it because they felt insulated from the same kind of review process? It would seem to me that anybody in the industry, whether Part 121 or Part 135, would want to get their act in order in a hurry so that if you people came swooping down on them they would be able to survive.

Do you have any idea as to why they didn't react more favorably?

Mr. KERN. Sir, I'll give you my personal observation. I think the commuter industry has been running as fast as it can and in many cases doing what they thought appropriate in order to comply with rules and regulations. But the dynamic nature of the industry and the growth in the industry probably caught up with them.

The other factor—and I find this in all segments of the industry also, whether it's the rotorcraft segment, the commuter, the agricultural operators, the flight schools, the repair stations, and initially the large carriers—I find that they are very, very, very surprised when they find they are the subject of an in-depth inspection by the FAA, as Mr. Beaudette said. Over the years I have had numerous attorneys, owners, operators saying, "Why me?" And I say to myself, "Well, I thought this was a well-publicized program. It was a program that we were not bashful about announcing. It's been two years, and you mean you don't understand why these seven or ten or twelve inspectors showed up at your door?"

I can't explain that, but I do think that that industry has been running as fast as they can. They did what they had been doing for years, and that—combined with the fact that we have never had inspections like this before; there was no precedent for it, there was no history of it, they had never seen it—surprised them.

Mr. MOLINARI. Let me follow up on that. You just said that they did what they had been doing for years. I understand that during the break you had mentioned that there were some 200 cases of falsification of records discovered during the course of this inspection. Is that accurate?

Mr. KERN. Well, it's a little inaccurate. My data shows that we have opened 200 enforcement investigation reports as a result of the inspection thus far, which indicates a potential for civil penalties or other kinds of adverse action by the FAA.

The records I have do indicate that we have had a number of findings of what I'll call falsification of records.

Mr. MOLINARI. Can you quantify that number for us?

Mr. KERN. The best number I have right now, and it deals only with the operations side, not the maintenance side, is about 15 findings of falsification of records. But let me say, as Mr. Beaudette also said, some of those—and I don't have the data—may have been legitimate kind of falsification or intentional; others may have been inadvertent recordings of flight and duty times or maintenance on a particular inappropriate cycle or flight time on a component of an engine. We don't have any further breakdown on that.

Mr. MOLINARI. I'm a little puzzled by that. How do you have a "legitimate kind of falsification"?

Mr. KERN. Well, probably not legitimate. Maybe "inadvertent" would be a better word——

Mr. MOLINARI. Okay.

Mr. KERN [continuing]. In that an operator has a recordkeeping system that might have been good on the blackboard, as was stated earlier, but now that he's doubled the number of aircraft the blackboard just isn't big enough to keep it any more and may have papers strewn about. We found that also.

Mr. MOLINARI. The point is, are any of these serious enough to warrant criminal prosecution?

Mr. KERN. I don't know of any that were that serious, but let me just amplify what Mr. Beaudette mentioned.

We saw it in earlier inspections several years ago. There is no doubt in our mind that when we do find overt and intentional falsification of records these days we take it very seriously. We get the FBI involved and any other forces that we can bring to bear on the situation.

Mr. MOLINARI. But I guess that's what I was leading up to. Have there been any cases so far uncovered during this inspection where you saw fit to contact the FBI?

Mr. KERN. I don't believe so.

Mr. MOLINARI. The fines, if there are civil penalties, would be the same for violation, whether it's a 121 or a 135 carrier; am I correct?

Mr. KERN. We make an attempt to be consistent. Yes, sir.

Mr. MOLINARI. So the thought occurs to me that in some of the cases the very survival of some of the commuters may be at stake depending upon the fines that may be imposed. Is that a consideration in the imposition of fines?

Mr. KERN. No, sir.

Mr. MOLINARI. Can you give us an idea of whether fines are anticipated and whether there would be some carriers, without identifying them, that will be subjected to some major fines?

Mr. KERN. I really would hate to speculate in that area. I personally don't have enough knowledge of those 200 individual Enforcement Investigative Reports instances even to prejudge today the magnitude of them or if they are going to result in the magnitude of civil penalty that would work a hardship on a particular carrier.

Mr. MOLINARI. Let me rephrase the question. Maybe that will make it easier for the panel.

You have completed inspection of 29 of the 35 carriers. There are only 6 remaining and I think you said they would be done by the end of the month. You must have a pretty good idea at this point in time as to the general seriousness of some of the charges, and I'm wondering whether we can expect that in at least some cases there will be substantial fines levied based on completion of 29 of the 35 carriers.

Mr. KERN. Well, let me ask because I don't have the findings broken down by the individual carriers. The data I have is kind of a summation of the entire program.

From what I have seen and what I know about the nature of the problems we've seen, there is nothing there that is going to cause the FAA to go out tomorrow and pull anybody's certificate. If all of these findings are in one or two carriers' areas, there's going to be

a problem for a carrier, but I suspect that they're fairly even across the board.

Let me ask Mr. Beaudette——

Mr. OBERSTAR. If the gentleman would yield, and Mr. Beaudette, I think that the original purpose of the FAA inquiry was to look at raw trends and then, from the discernible trends within the industry, go back into the more detailed inspection carrier by carrier. Is that correct?

Mr. BEAUDETTE. Well, we did want to develop transient indicators. But we have uncovered 200 individual cases that we are pursuing from an enforcement standpoint.

Mr. MOLINARI. And if appropriate, they would warrant a fine at this point, or when you complete your review process?

Mr. KERN. That's correct.

Mr. OBERSTAR. So it's significant that just from that modest beginning there are broader implications.

Please go ahead, Mr. Beaudette.

Mr. MOLINARI. Mr. Beaudette, what I'm driving at is that the 200 may not be broken down, but you can tell from the 200 the seriousness of some of them and whether that seriousness would call for sizable fines.

Mr. BEAUDETTE. Again let me just restate to you that the way we have done these inspections and traditionally the way the FAA has focused on a problem when they find it is one, the inspections are done, as we mentioned, by people outside the District Office, with a purpose of asking questions to see things that perhaps they don't see routinely. They leave the inspection package with the certificate-holding District Office. The findings that we ask them to look for are one, compliance with regulations; if they see what appears to be noncompliance, to document that and to leave that as an open enforcement action. So when the inspection team leaves they leave findings not only on compliance with our regulations, but with company manuals and other things. The District Office then follows up, investigates further to see one, if it's a valid finding; two, if there is sufficient proof with our lawyers to then take enforcement action. But before they start that we ask them to concentrate on corrective action. Make sure the problem is corrected. We may go back and fine you later, but let's make sure the problem is fixed.

Given the compressed amount of time that we have spent on these 35 carriers to gather data to draw some conclusions about the rest of the industry, I have not seen the follow-up corrective action reports nor those problems that were initially identified as enforcement violations as to whether in fact investigations have been completed and whether in fact they do hold up. I would say that from that number we could expect through the process to see more of them rather than less of them result in some sort of a fine. In the data that I looked at, again, as I said it was all raw data. It wasn't broken out by carrier. As Mr. Kern said, if a particular carrier had more of those than others, their fines are going to be more substantial and there may be some systemic problems there that might even lead to something.

I think, prefacing it the same way that Mr. Kern did, from my reading of that information right now I wouldn't look to see us

grounding a number of carriers in the near future, but I would look to see some enforcement action when we're sure that the corrective action has been taken and they've gone through the legal system. I think some of them are bona fide violations.

Mr. MOLINARI. I appreciate that. I think that's probably as far as you can go.

I just have one further question, Mr. Chairman.

One thing that concerns me is the number of new pilots. We talk about 5,300 in the system and 4,000 of them brand new. As somebody who is forced to take the commuters myself, that makes me somewhat uneasy.

What are we doing to ensure that with such a large number, almost 80 percent, new pilots in the system—I think in some cases it's fair to say that if you have a pilot and a copilot on some of those commuters, they're both going to be new with 4,000 out of 5,300. What are you doing to ensure that they're adequately trained and that we're taking off in a safe environment?

Mr. KERN. Let me start by saying that we share the concern. If I could speak for the industry, I believe the industry shares a concern about the pilot supply in general.

While we all forecast a pilot shortage and we expect it to be here, even though the people you're flying with on the carriers may be young and relative to the people that were flying five or ten years ago may be relatively less experienced and less seasoned, we're confident in the FAA that they still meet the safety standards in terms of the numbers of flight hours, the training, and the minimum levels of experience that we've established. In fact, the surveys I've seen—and they look younger to me every year, also; we all have that problem—still show that even the youngest have several thousand hours of flight time. The lowest numbers I've ever heard in terms of flight hours are still in the thousands.

Mr. MOLINARI. But isn't it becoming increasingly difficult for the commuters to hire pilots that have adequate flying time and other qualifications?

Mr. KERN. I think you should ask the industry, but I will give you my impression.

My impression is that it is getting more difficult and it will continue to get more difficult over the next two, three, four, five, ten years from now. I mentioned earlier that I believe that this has the potential for growing into crisis proportions, this pilot problem.

Now, the industry and the academic community, in recognizing this and accepting the responsibility for it— and the FAA—as we move from a military-based training pilot supply to an academic supply source, I think is beginning to meet the challenge. I mentioned earlier that there are a number of colleges and universities that have developed very, very good four-year curricula that can equate very easily to—and maybe outstrip—some of the military training programs that we have seen historically.

Mr. Beaudette and I and others here in the room have been personally involved in watching this development and participating in it. It's one of the new and exciting things that are coming along. The new training aids that are being developed and simulators and devices—it's a new technology, and it's really refreshing to see schools like St. Louis University and the University of North

Dakota and Emery-Riddle and Ohio State, Purdue, and on and on and on, the legitimate kind of four-year degree-granting institutions having a heightened interest in it these days and investing a lot of money into facilities and devices and classroom space for the pilots of the future.

Mr. MOLINARI. Thank you. I appreciate that.

Mr. Chairman, I thank you.

Mr. OBERSTAR. Well, thank you very much. Again, as always, the gentleman from New York has focused on a critical point and one that has been, in other areas, a matter of considerable inquiry by this committee. This matter of pilot training parallels that of air traffic controller training.

The point to emphasize is that a pilot who is certified and qualified is qualified. He meets the minimum requirements. He's qualified or he's not going to get in that cockpit. But it's the seasoning, the experience factor that is so important. And if you're joining a seasoned pilot and a newly qualified pilot, they need to work out a game plan to work together, as we discovered in Galaxy Airlines and in other incidents. And if you place two qualified but inexperienced people together in that cockpit, all the more reason for coordination and for concern that they do work together effectively.

This matter of numbers of air traffic controllers as compared to seasoned controllers, those who are sufficiently experienced, is a matter that we have focused on again and again in this committee.

So I am very pleased to see this focus of your inspection and the concern about the pilot turnover, but the matter of retention is another concern. What's the average pay of an entry-level commuter pilot as compared to that of an entry-level major airline pilot?

Mr. KERN. Mr. Chairman, I honestly don't know the answer to that specifically, but there seems to be a motivation of some type that lures them to the larger aircraft and the larger companies because that's where they seem to go.

Maybe somebody else on the team——

Mr. OBERSTAR. Another member of the panel?

Mr. UNDERWOOD. I think there has been big improvement in pay for commuter pilots. I can recall about six years ago when I was doing a series of enroutes for a particular commuter, I stayed overnight on one of their overnights and we were discussing pay over supper. The first officer on that particular airplane, had he been able to receive his total salary, couldn't have made my house payment.

When I've talked to them more recently, pilots for the same company are now starting to get some pay that is reasonable. That's getting better.

Mr. OBERSTAR. That's a very significant report.

Mr. Kern, I would like you to provide a comparative analysis for the record on that matter.

[The following was received from Mr. Kern:]

The FAA has not performed a recent analysis of pilot salaries. We have received, however, a recent analysis on cockpit crew salaries prepared by the Air Line Pilots Association (ALPA).

According to the ALPA analysis, the average salary for all cockpit crews at all ALPA carriers in 1988 was $80,200. That figure did not include American and Continental Airlines. The average salary for pilots at regional carriers represented by ALPA was about $23,400.

Mr. OBERSTAR. We are now on the downside of a recorded vote and I would like to conclude the hearing on another point.

The final point is that earlier this year Administrator McArtor indicated to us that a rulemaking would be forthcoming on overwing exits on 747s. It's now several months, at least six months, since that commitment was made and we have not yet seen the final rule adopted. So I'm wondering, when is it going to come? Do you have any idea?

Mr. KERN. Well, in fact the rulemaking has been developed, Mr. Chairman. I don't know the exact stage; I don't know if it's left the Administrator's office or if it's at OST or OMB yet, but we can supply that for the record.

Mr. OBERSTAR. Please do.

[The following was received from Mr. Kern:]

Notice of Proposed Rulemaking No. 87-10 was issued on October 16, 1987, and published in the Federal Register on October 20, 1987. The comment period closed on December 21, 1987.

The FAA forwarded a final rule document to the Office of the Secretary of Transportation on September 28, 1988.

Mr. OBERSTAR. Thank you very much.

Mr. KERN. Thank you, sir.

[Mr. Kern's prepared statement follows:]

STATEMENT OF JOHN S. KERN, ACTING DEPUTY ASSOCIATE ADMINISTRATOR FOR REGULATIONS AND CERTIFICATION, FEDERAL AVIATION ADMINISTRATION, BEFORE THE HOUSE COMMITTEE ON PUBLIC WORKS AND TRANSPORTATION, SUBCOMMITTEE ON INVESTIGATIONS AND OVERSIGHT, CONCERNING THE SPECIAL EMPHASIS INSPECTION OF COMMUTER AIR CARRIERS. SEPTEMBER 28, 1988.

Mr. Chairman and Members of the Subcommittee:

On behalf of Administrator McArtor, I welcome this opportunity to appear before you today to discuss our ongoing special emphasis commuter inspection program. With me today are Dan Beaudette, Deputy Director, Flight Standards Service, and two of our aviation safety inspectors, Dan Underwood and Raymond Morantes. Mr. Underwood is an operations inspector from our Lincoln, Nebraska Flight Standards District Office (FSDO). Mr. Morantes is an airworthiness inspector from our Dallas-Fort Worth FSDO. Each has participated recently as a member of a commuter inspection team during our special emphasis program.

Last year we witnessed an accident record in the commuter segment of our industry which Administrator McArtor described earlier this year as "unacceptable". Commuter airlines experienced 33 accidents and 58 fatalities in 1987--the highest totals since 1980. The accident rate per hundred thousand hours more than doubled what we saw in 1986, when the industry experienced a record low number of accidents.

The 1987 safety record for commuter air carriers was a significant departure from the positive trend since 1980 which had occurred despite the record growth in the commuter airline industry. Passenger traffic on commuter carriers had increased 11.2 percent annually from 1980 to 1987--12.9 million enplanements to 27.2 million. Revenue passenger miles more than doubled.

Ten years ago the FAA totally revised and upgraded our Part 135 operating regulations for commuter airlines, as a result of deregulation. Every existing commuter carrier was recertified to meet higher regulatory standards and every new commuter entrant had to meet those same standards. Those regulatory changes and improvements within the industry and FAA brought about substantial change in the level of safety by commuter operators.

The events of 1987 and the first three months of this year, however, prompted Administrator McArtor to announce on March 8, a special one year, three phase inspection of commuter operators to determine their compliance with the FAA's rules and regulations. I would now like to provide an update on our inspection efforts and other initiatives we have taken to improve commuter safety.

Phase One of our special commuter inspection program, which was completed on April 22, involved an analysis of all available data related to commuter airline safety to identify potential inspection candidates and focus areas for our effort. A thirty-six member analysis team composed of DOT, FAA, DOD and contract personnel was assembled and divided into five panels. The panels were tasked with the responsibility for evaluating specific data on individual commuter operators and identifying candidates to be inspected. The analysis team identified several focus areas for the inspections. Airworthiness focus areas identified were: management, training, airworthiness directives, inspection programs, minimum equipment lists, service difficulty reports, and weight and balance. Operations focus areas identified were: management, training, check airmen, crew coordination, flight and rest time, and weight and balance.

Our analysis found management practices to be a problem area. Many commuters have experienced rapid growth from a two or three aircraft fleet to large numbers of aircraft without concurrently acquiring managers experienced in large complex operations. This problem came to light from the large number of findings in major

program areas which were a direct result of inadequate, poor, or nonexistent management procedures.

Two critical areas where management deficiencies were readily identified were inspection and maintenance programs. Many commuter operators experiencing rapid growth, as a result of deregulation, added new or different make and model aircraft. The addition of these aircraft required more complex inspection and maintenance programs. These programs were unfamiliar to existing management personnel. Specific problem areas involved inspection programs which did not meet the manufacturers' recommended inspection intervals and failed to cover all the equipment installed on the aircraft. We also found maintenance programs which lacked adequate procedures or adequate record keeping. We believe these are key to a sound maintenance program.

Training programs, including management, flight crew and maintenance personnel training, have also not kept pace with the rapid changes in the commuter industry. Because they are integral parts of training, check airmen programs and crew coordination were deemed necessary focus areas. As you know, check airmen

administer flight and knowledge tests, thereby controlling the operational standards of the industry and providing feedback to instructors in training programs. Lack of crew coordination has been determined to be directly involved in numerous accidents and continues to surface as a problem area as the result of FAA enroute inspections.

After completion of the Phase One analysis, we identified inspection candidates (approximately 20 percent of the commuter industry). Phase Two, consisting of on-site inspections of designated commuter operators, began on May 23 and will be completed by the end of this month. To date, we have completed inspections on twenty-six carriers and another five are in progress. Inspections for seven operators were cancelled as a result of the carriers voluntarily surrendering their operating certificates or operations specifications. The on-site inspections were conducted by inspection teams, usually consisting of a team leader and seven inspectors, who were assembled from outside the certificate holding office. This was done to avoid any inference of partiality by the inspection team. As we complete Phase Two, it should be noted that these are

special emphasis inspections, not to be compared to our regular NASIP inspections which are complete top to bottom safety audits. These special emphasis inspections are limited to the focus areas and are designed to uncover any deficiency trends at the inspected air carrier and the industry in general. Of course, any safety problems found during Phase Two were immediately corrected and, in some instances, enforcement actions have been initiated. To date, approximately 200 Enforcement Investigation Reports have been opened. At the conclusion of each inspection, the inspection team provides the inspected carrier with an exit briefing. A briefing and a written report are also provided to the certificate holding Flight Standards District Office Manager and the carrier's principal inspector, who, in turn, will brief the commuter operator and begin to work with the operator to correct deficiencies.

Phase Three, which is the report compilation stage, will be completed in December, when we plan to issue a final report. Shortly, thereafter, we also plan to assemble all of our principal inspectors with certificate management responsibilities for commuter air carriers to discuss the inspection results and the

requirements of structured visits which they will be tasked to carry out with each of their commuter operators.

Our special emphasis inspection should tell us a lot about current compliance with our safety regulations by commuter operators and will assist in identifying areas where we may need to stress additional surveillance or follow-up activity. Our review of commuter operators, however, has not been limited to the special emphasis inspection. As part of the Administrator's Impact 88 initiatives, we have examined the issue of aircrew performance, particularly the need to improve professionalism on the part of both Part 121 and commuter pilots.

In conjunction with NASA, APA, ALPA, RAA and ATA we participated in a joint government/industry task force on flight crew performance which made a number of recommendations. Some of the more significant ones would: require Part 135 operators, who operate aircraft requiring two pilots, to comply with Part 121 training, checking, qualifications and record keeping requirements; call for the issuance of an SFAR and Advisory Circular to permit development of innovative training programs;

establish a requirement that all training be accomplished through a certificate holder's training program; make the approval of training programs based on course content and training aids rather than using specific programmed hours; and require Cockpit Resource Management Training along with the encouragement of greater use of Line Oriented Flight Training (LOFT). Another recommendation called for the creation of an FAA office with responsibility for air carrier flight crewmember training.

We have developed an ambitious action plan to implement the task force recommendations. We have already started working on the regulatory projects outlined in our action plan to implement the recommendations of the task force. We have in final coordination a draft advisory circular which will provide guidelines to all air carriers for establishing and monitoring cockpit resource management training. This training is designed to be a regular part of recurrent training for all flight crewmembers. Under review is a proposed rule which would establish a voluntary alternative method for meeting the training, checking, certification, and qualification requirements for flight crewmembers, flight attendants, aircraft

dispatchers, instructors, evaluators and other operational personnel subject to Parts 121 and 135 of our regulations. We also have under review a proposed rule to upgrade Part 135 Commuter Training Requirements. We also plan to update our Advisory Circular 120-35A on LOFT. We are continuing to review our regulations which govern commuter operations to determine whether additional changes should be made.

Next month we will be implementing another task force recommendation by establishing an organizational unit responsible for air carrier flight crewmember training. This organization will be located in our Flight Standards Service. We are also seeking to increase use of simulation to increase pilot skills and have issued an exemption from inflight training requirements to commuter operators to permit them to make greater use of advanced training devices (a basic form of simulator) in recurrent pilot competency/instrument proficiency check requirements.

In closing, I want to stress that we are taking action on a variety of fronts to achieve improvements in commuter safety. We think our inspection efforts, along with regulatory and other

changes will go a long way toward identifying and remedying safety deficiencies in the commuter industry.

That completes my prepared statement, Mr. Chairman. My colleagues and I would be pleased to answer any questions you or other Members may have at this time.

Mr. OBERSTAR. The subcommittee will continue this inquiry by bringing in at another date the representatives from the commuter airline industry itself and the National Transportation Safety Board and again will follow up on the FAA inspection and the recommendations that will be coming forth from this inspection process.

I want to compliment the FAA again on its responsiveness and the early action taken in this area, and I must say also for the cooperation on the part of the commuter industry itself. They have been very responsive. It is a new, growing era for commuters, one that needs to be encouraged in this hub and spoke system. They certainly are the vital ingredient for future growth of the airline industry as it is now configured, and thus, all the more concern on our part that the commuter industry grow and mature in these areas of safety that we have been covering today.

The subcommittee stands adjourned.

[Whereupon, at 1:00 p.m., the subcommittee was adjourned, to reconvene at the call of the Chair.]

90-170 (104)